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The Local Committee of the Diamond Jubilee of the American Pharmaceutical Association Have Planned a Program of Interest. A. Ph. A. Conventions Always Profit Those Who Attend. You Are Invited and Expected—A St. Louis Welcome Awaits You!

Vol. XVI, No. 8 AUGUST, 1927

JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

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THE SEVENTY-FIFTH ANNUAL CONVENTION—THE DIAMOND ANNIVERSARY MEETING—WILL BE HELD IN ST. LOUIS DURING THE WEEK OF AUGUST 22nd.

The 1927 Meetings of the American Association of Colleges of Pharmacy and the National Association of Boards of Pharmacy will also meet in St. Louis, same time and place.

For Association Roster and Roster of the Boards of Pharmacy, see pages xii, xiv, xvi and xviii.

For Roster of Officers of Pharmaceutical Assoc.—State and National, see pages xxii, xxiv and xxv.

Entered as second-class Matter, January 23, 1917, at the Post Office at Easton, Pa., under the Act of March 3, 1879. Acceptance for mailing at special rate of postage provided for in section 1103. Act of October 3, 1917; authorized July 10, 1918.

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ASSOCIATION ANNOUNCEMENTS.

THE DIAMOND JUBILEE OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

Programs—of the AMERICAN PHARMACEUTICAL ASSOCIATION, the National Association of Boards of Pharmacy, the Conference on Pharmaceutical Research and brief outline program of the Plant Science Seminar—are printed in this issue of the JOURNAL. See under "Societies and Colleges" and the "Department of the National Association of Boards of Pharmacy." The program of the American Association of Colleges of Pharmacy was printed in July JOURNAL, p. 700.

THE ST. LOUIS ENTERTAINMENTS.

Among the entertainments provided for the Ladies are the following: Base Ball Game, Musicale, Theater Parties, Card Parties, Auto Trip around St. Louis. For the Men: Veterans' Luncheon, Luncheon and Smoker. For the Ladies and Gentlemen: Testimonial Dinner, Opera for All Registrants, Trip to Zoo and Botanical Gardens, Pic Nic Box Luncheon at the Missouri Botanical Gardens.

VERY IMPORTANT!

When purchasing your ticket to St. Louis be certain to secure a receipt or a certificate from the R. R. Agent, as the Local Transportation Committee has arranged for the certificate plan of Transportation, which means fare and one-half *provided* over 250 come by train.

If you are going to St. Louis by auto, be sure to write Local Secretary, A. W. Pauley, for an auto identification sticker for your window shield, which will insure police courtesy in St. Louis.

HOTELS.

Make your hotel reservations promptly—if you have not done so—apply direct to the Coronado Hotel.

The Local Committee, of which Alfred W. Pauley is the Chairman and Local Secretary, and Anton Hogstad, Jr., is the Associate, says:

"Arrangements have been made for trips of interest and pleasure for you. Plans have been completed that will benefit our ASSOCIATION generally and the members individually. This Convention above all others will be one of material information—a Convention of action—a Convention of friendly relationships as well as one of much enjoyment. A Convention of Pharmacists, by Pharmacists and for Pharmacists."

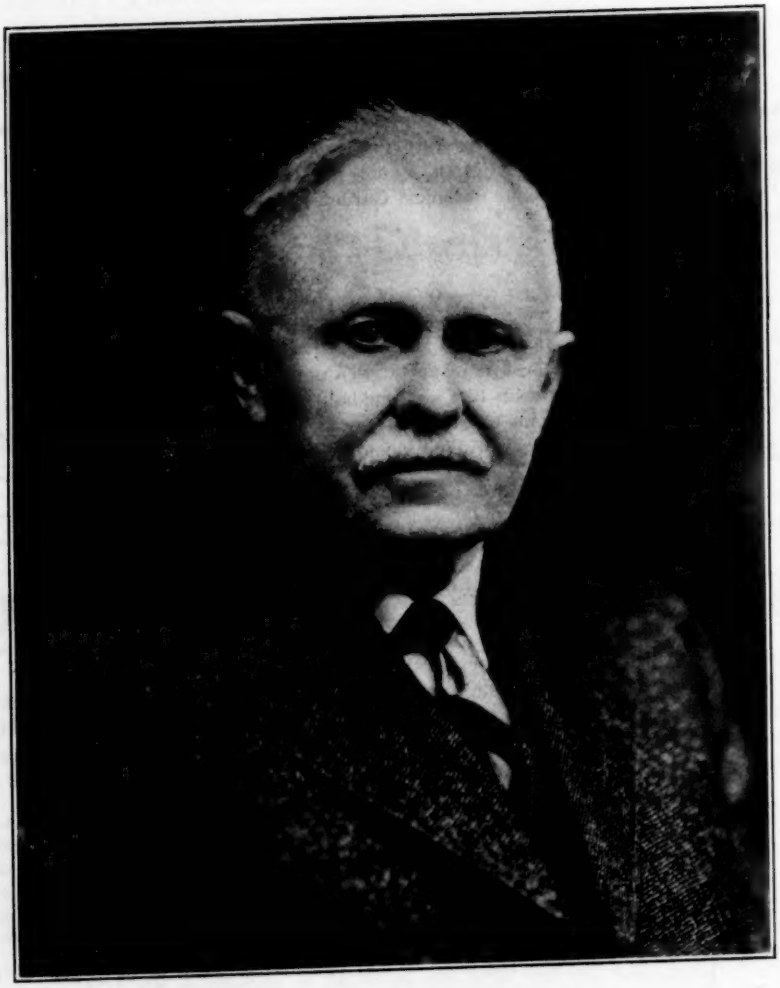
COME!

CONTRIBUTIONS TO THE MUSEUM AND LIBRARY OF THE A. PH. A.

Those who have historical material—which should permanently be preserved and the owners would like to present for that purpose to American Pharmacy—should set it aside, marked "For the AMERICAN PHARMACEUTICAL ASSOCIATION, to be turned over to the ASSOCIATION when the Headquarters is completed."—See the Historian at the St. Louis meeting.

Many would like to have their names remembered by endowments and memorials to pharmacy by their will or during lifetime. Everyone gives thought to other worthy purposes, but American Pharmacy, in general, has never before had the opportunity of serving, as will now be possible in the A. PH. A. Headquarters.

The time to give this matter attention is "as soon as possible." Due acknowledgment will be made of all donations. If you have no historical material or books, you may know of some one who would like to make a donation or provide an endowment.



EMIL L. BOERNER.

JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

VOL. XVI AUGUST, 1927 No. 8

EMIL LOUIS BOERNER.

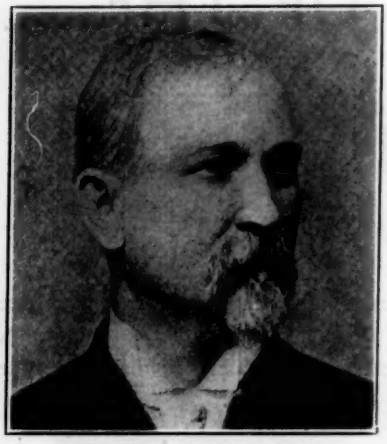
Emil L. Boerner came to the United States with his parents in 1857, who located in Newtown, Pa., from where they moved to Chippewa Falls, Wis. Here the youth received his early education. When twelve years old the family moved to Iowa City where the young man attended McLeans Commercial College; after graduating from this institution Mr. Boerner engaged as clerk in the drug store of Thomas J. Riggs. In 1874, he matriculated at the Philadelphia College of Pharmacy and received his diploma in 1876. The method of commercial production of castor oil follows that submitted by him in his thesis—"Ricinus Communis."

Coming back to his home city the young pharmacist engaged in the practice of his profession on his own account; last year he celebrated the fiftieth anniversary of his successful venture and this year he completes fifty years of membership in the AMERICAN PHARMACEUTICAL ASSOCIATION. From 1882–1884 Mr. Boerner lectured in the Iowa College of Pharmacy at Des Moines. A committee of the Iowa Pharmaceutical Association, composed of the subject of this sketch, J. H. Harrison and George H. Schafer brought about the establishment of the Department of Pharmacy at the State University and this, later, became the College of Pharmacy. Mr. Boerner was chosen Professor of Pharmacy and also Dean of the Pharmacy Faculty, which positions he held until 1904. He was honored with the degree of Doctor of Pharmacy by the Iowa State University in 1896.

In 1908, in order to devote all of his time to his pharmacy, he withdrew from the Boerner-Fry Company, manufacturers of perfumes and flavoring extracts, of which he was President since its organization.

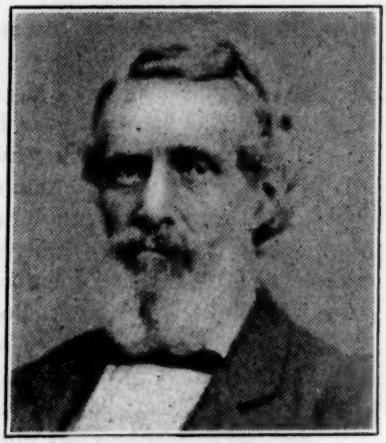
Our 50-year member attended the Des Moines Convention and had hoped to be at the Diamond Anniversary meeting in St. Louis, but an accident of some weeks ago will prevent his attendance; otherwise, he is enjoying good health and is seldom absent from "Boerner's Prescription Pharmacy," which is well and favorably known throughout the "Hawkeye State."

Eugene L. Massot. G. T. Chamberlain

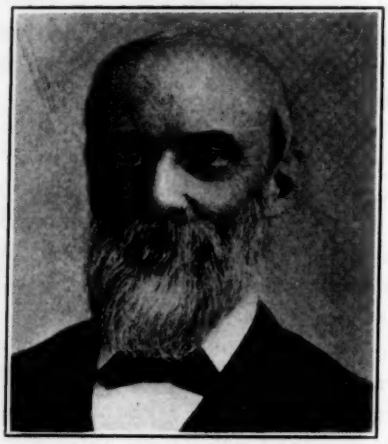


MAURICE W. ALEXANDER.

THEODOR KALB.



GEORGE D. COGGESHALL.



ALFRED B. TAYLOR.

Enno Sander C. B. Guthrie

Signatures of Eugene L. Massot, Vice-President of the A. PH. A., 1871, one of the founders of St. Louis College of Pharmacy; G. T. Chamberlain, active in the St. Louis meeting of 1871; Enno Sander, a former A. PH. A. President; C. B. Guthrie was President of the National Pharmaceutical Convention which organized the AMERICAN PHARMACEUTICAL ASSOCIATION. Photographs of M. W. Alexander, former A. PH. A. President; Theodor Kalb, active St. Louis member, in 1871; George D. Coggeshall presided over the 1852 convention and Alfred B. Taylor was its Secretary.

EDITORIAL

E. G. EBERLE, EDITOR 10 West Chase St., BALTIMORE, MD.

PERIODS IN THE HISTORY OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

PERIODS in the life of an individual and the history of an association are always interesting. To-day the writer read the diary of the late Ex-President John F. Hancock, relating to his trip to the St. Louis meeting of 1871. Stop-overs made the journey more interesting than it otherwise would have been; Pittsburgh was one of the stopping-points, where one of the aims and purposes of the AMERICAN PHARMACEUTICAL ASSOCIATION came into action by the suggestion of members Edward Parrish, John M. Maisch, John F. Hancock and others, in commending to Pittsburgh pharmacists the establishment of a local association, and steps for such an organization were at once taken.

Henry Bowman Brady, from Newcastle-upon-Tyne, the President-Elect of the British Pharmaceutical Conference, attended the convention as representative. The North German Apothecaries' Society had been congratulated by the AMERICAN PHARMACEUTICAL ASSOCIATION on the completion of fifty years of history, which was duly acknowledged and the following paragraph (translated) is taken from the letter of acknowledgment:

"It has long been our purpose to maintain for pharmacy that position which it has reached in a scientific and theoretical point of view, and requesting all kindred societies to unite their efforts with ours. We trust that we may be successful in gaining the recognition by the State of the independence of pharmacy."

Canon H. J. Cody, formerly Minister of Education for Ontario, in addressing the recent convention of the Ontario Retail Druggists' Association said to the members:

"You are all, I am quite sure, prepared to regard yourselves primarily as ethical and scientific pharmacists. Perhaps the term 'Druggist' has in some quarters become usual, but to my mind, the term 'Pharmacist' is undoubtedly a term most suitable for application to the ethical and scientific side of your calling. Your work does require a broad foundation, not only of general knowledge, but of specific training. It is not fair, in these days, for anybody to serve the public unless his outlook is unduly wide, and his knowledge of the basic principles of his calling correctly based."

The coöperative A. PH. A. spirit was exemplified by Vice-President Eugene L. Massot, of 1871, who died during his term of office; it was said of him:

"The establishment of the St. Louis College of Pharmacy was mainly secured by his efforts, and so much was he esteemed by his confrères, that a special meeting of the College was held to make some proper expression of their feelings."

Among many distinguished pharmacists present in addition to those heretofore mentioned, were: M. W. Alexander, G. T. Chamberlain, Charles O. Curtman, C. Lewis Diehl, Louis Dohme, Albert E. Ebert, W. J. M. Gordon, Theodor Kalb, J. M. Maisch, George and Edward Mallinckrodt, G. F. H. Markoe, John McKesson, Jr., C. F. G. Meyer, Edward Parrish, William Procter, Jr., Joseph P.

Remington, Enno Sander, William Saunders, Henry Scheffer, etc. The members in attendance partook of the hospitality of Mr. Shaw, at Shaw's Botanical Gardens.

President William C. Anderson, of the N. A. R. D., after extending congratulations in behalf of the latter organization, at the 1901 A. PH. A. meeting, concluded his remarks by saying, "I am enthused with the bright prospects for pharmacy when I look into the faces of these pioneers of pharmaceutical organization, and picture the National Association of Retail Druggists looking up to the AMERICAN PHARMACEUTICAL ASSOCIATION for hope and counsel, and this older organization in turn leaning toward and gaining strength from the younger, while each, following the course mapped out by its policy, with renewed earnestness and vigor, and gradually drawing closer and closer together, goes on toward its goal, until scientific pharmacy is elevated to that high standard to which we aspire and commercial pharmacy is surely established—until that time when these two organizations, standing shoulder to shoulder, shall form the firm foundation on which is built that magnificant structure, American Pharmacy."

Edward W. Case and G. W. Hunter were present as delegates from Canada.

During this year, 1901, Charles Rice, Edward R. Squibb and William R. Warner ceased their labors which left their impress on pharmacy.

The St. Louis meeting of 1901 stands out because of the inaugural session of the Section on Practical Pharmacy and Dispensing, of which the late Henry P. Hynson was the first chairman, and to which the late Enno Sander donated an annual prize for its encouragement.

The Sections were favored with a number of most excellent papers and preparations were made for the 50th anniversary meeting of the A. PH. A. over which the lamented Henry Milton Whelpley presided. His suggestive mind contributed largely to the forming of the House of Delegates and of the National Association of Boards of Pharmacy.

The St. Louis meetings have been eventful in the history of the AMERICAN PHARMACEUTICAL ASSOCIATION and this year's convention will be marked by further progress because the Headquarters' project has been brought nearer to achievement.—E. G. E.

THE CONFUSION OF TITLES.

ON THE continent of Europe there has been a growing antagonism between pharmacists and druggists and this situation has been brought about by somewhat indefinite terms in pharmacy and drug laws. It is well to define specifically what is meant by "pharmacist" and by "druggist."

In most of the countries of Europe the pharmacist is the legally authorized preparer and vendor of medicines, but owing to the absence of a rigid definition for a medicament loopholes are created—some of which should have no standing—that provide opportunities for the sale of many pharmaceutical items by druggists and herbalists. The regulations are in many instances responsible for the troublesome conditions, as the quantity dispensed or sold and the use of the agent affects the status. As an example, 500 Gm. of lanolin is a dividing line; above that quantity the druggist may sell; a less amount must be dispensed by a pharmacist. A pharmacist dispenses zinc oxide ointment for humans; a druggist for veterinary purposes. In Rumania druggists may deal in about 300 listed medicinals. The

situation in the United States is not so very different—the most dangerous of poisons may be sold by anyone, provided they are to be used for insect destruction, paints, etc.

In Europe as well as in this country the number and kind of articles of a medicinal nature that may be sold by others than pharmacists are constantly increasing and there is no question but that the public is not given the protection it is entitled to or should have. The tendency, of course, is always toward extension of the privileges until the danger is impressed by mishap.

A measure of protection is afforded by insisting on having qualified pharmacists supervise the manufacture and putting up of medicinals and poisons. Most manufacturers of proprietaries recognize the importance of such safeguard for themselves and the public, but everyone is aware that some package medicines are manufactured for sale by persons who are uninformed relative to the pharmacy, chemistry and therapeutic action of these preparations. Some contend that the constituents are handled according to weight and measure of a tried formula, but we have in mind a large proprietary manufacturing establishment where pharmacists and chemists of high qualification make hourly tests of the product being manufactured and where the utmost care is exercised throughout the process of manufacture. The latter answers those who hold to the former opinion.

The *Journal of the Society of Chemical Industry* (Great Britain), in an editorial of the July 1st issue, finds confusion in the terms "Chemist" and "Druggist." We quote in part: "We concealed, so far as possible, from our neighbors the fact that our last President was a pharmaceutical chemist; we cannot conceal the fact that our reigning President spends his time in pharmacy and drugs, because his own presidential address is, we are informed, abundant evidence of his interest in these matters; a predecessor in the presidential chair, Sir William Pope, also has studied drugs, etc."

Continuing, the same editorial informs that the past Honorary Treasurer of the Society, D. Lloyd Howard, is this year's chairman of the British Pharmaceutical Society. The Editor holds that the instances prove his contention that the nomenclature requires revision, and believes that a determination on titles and definitions should be followed by a vigorous campaign for the education of those concerned, the public, and then the House of Commons; the House of Lords is considered hopeless. The contention is that chaos may prevail in that great department of learning which adjoins chemistry, pharmacy, physiology, biology and medicine and the chaos may be avoided by exact definitions.—E. G. E.

NATIONAL PHARMACY WEEK—OCTOBER 9-15, 1927.

It is anticipated that Pharmacy Week this year will be more generally observed than in the former two years of 1925 and 1926, both of which observances exceeded all expectations. The first Pharmacy Week in 1925 was so successful and the participation by pharmacists all over the country was so general that the members of the Committee were delighted and amazed. The second annual observance was increasingly successful and the evidences of the resultant benefits began to manifest themselves in many ways. The story of the second observance told of American pharmacy united in a great movement for public information of mutual benefit to both pharmacy and the public in the interests of a better understanding between the public and its pharmacists, of improved conditions in the practice of pharmacy and of a healthier, happier nation.—Get ready to do your part this year. More information will be found in the next issue of the JOURNAL.

SCIENTIFIC SECTION

INTERPRETATION OF BIOLOGIC ASSAYS.*

BY PAUL S. PITTENGER.

Most laboratory men know the behavior of drugs which can be chemically tested and can therefore interpret these results and intelligently apply the assay results to the proper adjustment of the products assayed.

Most of these men, however, have not had sufficient practical experience with Bio-Assays to know the behavior of the various drugs to which the Biologic Assay must be applied.

Therefore, they do not have the necessary experience to properly interpret and apply the results obtained by the assay.

The Biologic Assays themselves can be mastered after limited experience but the proper application and interpretation of the results must be backed by years of experience.

In order to market Biologically standardized preparations which will satisfactorily meet the new U. S. P. Standards, more is required, therefore, than just a working knowledge of the various Biologic Assay methods.

This knowledge must be backed by a sufficient amount of practical experience to enable one to properly interpret and apply the information gained from the assay, in issuing instructions for the proper adjustment of the product assayed.

In other words, one should have sufficient experience to know if a certain preparation tests 200% whether or not it should be diluted 100% and whether a re-assay is necessary after the dilution. Theoretically it should be diluted 100% and a re-assay should not be necessary. Practical experience, however, has shown that this is not always the case.

Whether or not a preparation should be given the full theoretical dilution or concentration as based upon the assay depends upon several factors.

First.—The permanency of the preparation (its rate of deterioration).
Second.—The percentage over or understrength.
Third.—The age of the preparation at the time of the assay.

1. THE PERMANENCY OF THE PREPARATION.

Preparations of Cannabis, for example, are practically permanent and, therefore, are usually as active after one or two years as they were the day tested.

In the case of such preparations it is safe to dilute to the limit and still be assured that the preparations will be of standard strength when they reach the consumer.

On the other hand, such drugs as Digitalis, Ergot[1] and Aconite deteriorate more or less rapidly and dilutions should not be carried too close to the theoretical.

Digitalis.—Some tinctures lose practically no activity within a year, others

* Read before the Scientific Section of the Maryland Pharmaceutical Association, Buena Vista Springs, Pa., June 30, 1927.

[1] "A New and Reliable Method for the Preservation of Ergot Preparations," by Paul S. Pittenger and C. E. Vanderkleed, JOUR. A. PH. A., August 1922.

lose 15 to 30% within two to three months. In most cases, therefore, preparations of digitalis should not be diluted to less than 110 to 115% of standard (Higher U. S. P. limit).

Ergot.—A freshly prepared preparation of Ergot in most cases loses from 25 to 30% within three months. After 4 to 6 months' aging the preparation will be found to be almost permanent.

The dilution recommended for Ergot preparations, therefore, should depend largely upon the age of the preparation at the time of assay.

Aconite.—Deterioration is very rapid. Preparations of this drug are sometimes almost inert within a year.

If 2% Acetic Acid is added to the percolating menstruum the preparation is much more permanent.

Preparations of this drug should not be diluted to less than 110 to 120% of the average standard (Higher U. S. P. Limit).

2. THE PERCENTAGE OVER OR UNDERSTRENGTH.

If the preparation assays within 100 to 150% of standard, you can usually depend upon the diluted preparation assaying in direct proportion to the dilution. In cases, however, where the strength of the preparation runs as high as 175 to 250% or in other words where high dilutions are necessary, the diluted preparation will not always test in exact proportion to the dilution.

In these cases it is always advisable to give only about three-quarters the theoretical dilution and re-assay.

This is the safest procedure and usually not more expensive because the increased yield due to the high dilution pays many times over for the re-assay.

It is a good practice in cases where preparations assay 150 to 200% of standard not to dilute the entire lot at once. This usually produces 50 to 100% over estimated yield and thus a proportionate overstock which may deteriorate to below standard before being sold. It is best to dilute only sufficient for immediate demand and then re-assay the remaining portion and adjust as required.

Deterioration of Dilutions.—High dilutions of some preparations tend to increase their rate of deterioration.

Highly diluted Fluid Extract of Ergot is in this class and a 100% dilution of a 200% Fluid Extract of Ergot is not advisable.

Concentrations.—In the case of *understrength* preparations the question always arises as to the best method of fortifying. Should the product be concentrated or an overstrength preparation added?

Here again *sufficient experience* is required to judge each individual case. For example, if the case be a S. E. Digitalis as low as 15 or 20% to be used for manufacturing purposes, it is satisfactory to use 5 times the usual formula quantities. On the other hand, if it be an Ergot preparation which had deteriorated to 20 or 30%, it is not advisable to use five times the usual amounts because of the possibility of the presence of toxic decomposition products.

If a preparation is only slightly *understrength* and an *overstrength* preparation is not at hand it is usually advisable to reduce the volume by taking the required amount of the preparation and reducing it in a high vacuum to an extract. This extract is then dissolved in the remainder of the preparation.

But here again it is necessary to have a knowledge of the behavior of the drug under consideration. Aconite, for example, cannot be treated in this manner because the slight amount of heat, required to concentrate, even in vacuum, splits the Aconitine into its decomposition products—Aconine and Benzaconine which are practically physiologically inert. If, however, the *preparation is very markedly understrength*, the above is not a profitable procedure, and would in most cases seriously affect the color and consistency of the preparation.

In these cases it is advisable to prepare a new preparation using an excess of drug in order to obtain an overstrength preparation which can be diluted with the understrength product.

In some cases this is not practicable as it would produce too large a yield. It is, therefore, advisable to make it a practice not to dump the drug from the percolater until after the assay, as the drug may not have been completely exhausted. Then, if necessary, add additional drug and re-percolate using the understrength preparation as menstruum.

Diluting with Understrength Preparations.—The use of understrength preparations for diluting those that are overstrength is usually practicable but there are cases in which it is not good policy.

In the case of *Pituitary Extract*, for example if the preparation is understrength immediately after making it is satisfactory for use in diluting overstrength lots. In some cases, however, you may have a preparaion which originally tested 100% and has deteriorated more rapidly than usual. Experience has shown that it is *not advisable to use such a preparation for dilution purposes*, because such lots have a tendency to start rapid deterioration in the new lot and it is, therefore, usually more profitable to discard the deteriorated lot.

3. THE AGE OF THE PREPARATION AT THE TIME OF ASSAY.

As before stated some preparations deteriorate more rapidly than others. In most cases, however, experience has shown that the most rapid deterioration takes place during the first three to four months. Some preparations which deteriorate rapidly during this period are comparatively permanent thereafter. This is the reason for the U. S. P. requirement that the standard F. E. Ergot supplied by the Bureau of Chemistry be aged 6 months before standardizing.

The author has also proven that practically all digitalis preparations deteriorate the most during the first three months after manufacture.[1,2]

In the summary of the results of one of these experiments[2] the following statement appears:

> "The tabulated results show the average deterioration in 9 to 13 months of 43 samples to be 18.8 per cent. The average deterioration of 38 samples during the first three or four months being 4 per cent per month while the average deterioration of 32 samples after the first three or four months was 2.4 per cent per month."

Therefore, in the case of drugs which deteriorate the *age* of the preparation must be taken into consideration when ordering dilutions. A fresh preparation should not be diluted as close to the theoretical as an aged preparation.

---

[1] "The Deterioration of 'U. S. P.' and 'Fat-Free' Tinctures of Digitalis," by Paul S. Pittenger and H. K. Mulford, Jr., JOUR. A. PH. A., March 1918.

[2] "The Deterioration of Tincture of Digitalis," by Paul S. Pittenger, JOUR. A. PH. A., December 1918.

RE-ASSAYS.

It is also important to know when re-assays are necessary in order to be assured that stocks meet the official requirements.

This depends entirely upon the permanency of the preparation. As before stated, Cannabis for example, is very stable. Therefore, once standardized usually need not be re-assayed if properly stored.

On the other hand, stock of preparations of such drugs as Ergot, Aconite and Ditigalis should be assayed at least every three months and readjusted to standard before offering for sale.

In cases were dilutions of 10 to 50% are made based upon physiologic assay, a re-assay of the dilution is usually not necessary. *Re-assays, however, are always necessary in the case of high dilutions and after all concentrations.*

NECESSITY FOR SUPPLYING ASSAYIST WITH ALL POSSIBLE INFORMATION IN REFERENCE TO SAMPLES.

From this brief description of some of the factors which influence the intelligent interpretation of Biologic assays and their practical application, the necessity is apparent for supplying the assayist with all possible information in reference to the product being assayed.

This information should include age, whether a new preparation or a re-assay of an old lot, information as to deviations from U. S. P. formulas such as an addition of Acetic Acid to the menstruum in Aconite preparations, etc. In other words, the assayist should have all available information.

Pharmaceutical manufacturers who do not have their own biologic laboratory and must select one to do this class of work for them should carefully consider the following:

1. The experience of the operator in practical biologic assay work.
2. The experience of the operator in the interpretation and practical application of assay results.

It is also important to select a laboratory in which information in reference to products submitted for assay is kept in the strictest confidence.

After selecting such a laboratory or submitting samples to your own analyst, confidence should be placed in the laboratory to the extent that all possible information will be furnished in reference to the product submitted.

This is the only way in which the full benefits of Biologic Assays may be obtained.

RESEARCH PHARMACOLOGIC LABORATORY,
SHARP & DOHME, BALTIMORE, MD.
June 1927.

THE VITAMINS OF CITRUS FRUITS.

Stanley G. Willimott and Frank Wokes, pharmaceutical chemists reported on some of the constituents of Citrus fruits at the recent meeting of the British Pharmaceutical Conference. In view of the theory that certain constituents of orange, lemon and grape fruit are produced by photo-synthetic action in the flavedo, a comparsion was made by the authors between their concentration in the flavedo and in the juice. Vitamins were found in all three fruits. Vitamin C is present to a greater extent in the *juice* of the grape fruit; Vitamin B is concentrated mainly in the flavedo; Vitamin A is present in greater amount in the orange, both in peel and juice.

THERAPEUTIC USE AND PHARMACAL SALE AS A BASIS OF ADMISSION OF DRUGS TO THE U. S. P.

BY H. H. RUSBY, M.D.

In previous papers (JOUR. A. PH. A., 15, 961 (Nov.) and 16, 538 (June)), I have discussed the subject of pharmacal sales as an indication of therapeutic use and therefore as constituting pharmaceutic necessity. Without pursuing that subject further at the present time, I desire to analyze the report of the Survey of the Charters' Committee regarding the sale of crude drugs in the pharmacies of the United States.

In connection with the survey, emphasis must be laid on the following facts.

1. It involves actual visits to 911 pharmacies and the careful interviewing of their proprietors.

2. The pharmacies visited were selected with great care, to represent all sectons and all classes of communities and populations, so that the survey became about as representative and informative as it could be made.

3. The form in which the drugs recorded were sold in these pharmacies was the crude condition, whole or cut, and in bulk; that is, not in sealed packages but weighed out in the loose state, by the pharmacist himself.

4. The records do not include sales of preparation of these or other drugs, either made by the pharmacist or supplied to him by the manufacturer.

Thus considered, the following crude drugs were sold in fifty per cent or more of the pharmacies visited.

Apium or Celery Seed	69%	Matricaria	72+
Cardamom Fruit	58+	Myrcia	63+
Chondrus	54+	Orris	56+
Cinnamomum, Ceylon	54+	Pimenta or Allspice	50+
Cinnamomum, Saigon	54+	Cydonium or Quince Seed	51+
Fœniculum	66+	Sassafras	61−
Juniperus	66+	Sinapis Alba	66+

Aside from the "pharmaceutical necessity" for having these fourteen drugs represented, it is doubtful if anyone will seriously deny that any one of them is devoid of therapeutical usefulness. In the case of the cinnamons, we have admitted the Saigon, but rejected the Ceylon, which is a better variety and sold to the same extent.

In addition to these, we find that *Lawsonia* or Henna Leaves is sold in 60% of the stores, *Helianthus* or sunflower seed in 63% and *Carthamus* or Safflower in about the same number. Still, these are scarcely to be regarded as therapeutic agents proper, and their emission may be disregarded.

Drugs sold in one-third or more of the pharmacies but in less than half, are the following:

Arnica Flowers	37+	Lavender Flowers	35+
Cinchona Ruba (specifically sold as such)	41+	Mace	42+
Cocculus Indicus, or Fishberries	44+	Piper Nigrum	49
Chenopodium Seed	37+	Quillaja	42+
Cordiander	45+	Sanguinaria	40+
Illicum		Senna Pods	38+

Among these twelve articles are a number that are distinctly toxic, and all are indisputably active therapeutically.

Crocus, sold in 41%+, Fenugreek in 37%, Logwood in 35% and Rape Seed in 36%, may be objected to as not being specifically therapeutical in their use.

The following are sold in 25% or more, but in less than 35%:

Cassia Buds	34%	Citrullus or Watermelon Seed	30%
Cataria or Catnip	30%	Populus Buds	33%
Cinchona Yellow (specifically sold as such)	25%	Resina Draconis	31%

Here we have in all thirty-one drugs sold in 25% or more of our pharmacies, all therapeutically active, but not in the Pharmacopœia, except the Cinchonas and Saigon Cinnamon. It remains to be noted that many drugs not sold in so many as 25% of the pharmacies are already in the Pharmacopœia for other reasons, principally because they are used for preparations that are recognized. Of these, I name Cantharis 24%, Ipecac and Guaiac 3%, Lobelia 17%, Kino, Stramonium, Podophyllum, Calumba and Styrax 15%, Senega, Spearmint and Cimicifuga 13%, Opium and Granatum 12%, Rhus and Gambir 10%, Herberis and Ergot 9%, Stavesacre 6% and Krameria 5%. A number of other drugs sold in less than 25% of the stores, should be included because of the demand for their preparations.

Whether the pharmacist does or does not manufacture his own preparations, his professional status assumes that this is within his province. Should he do so, it is quite as important that he use a standard drug as that a drug which he sells entire should be of standard quality. Of such drugs, I mention the following: Taraxacum and Triticum 19%, Salvia 15%, Caulophyllum 13%, Hamamelis 10%, Leptandra, Apocynum and Viburnum Prunifolium 6%.

DETERMINATION OF TOTAL CITRIC ACID IN SOLUTION OF MAGNESIUM CITRATE.

BY JOSEPH L. MAYER.

From the nature of the preparation and experience gained in its analysis it appeared to me that the U. S. P. IX did not go far enough in simply establishing a standard for magnesium in **Solution of Magnesium Citrate;** I, therefore, suggested that the U. S. P. X should include in addition standards for *free and total citric acid* and supplied methods for their determination. Being an auxiliary member of sub-committee 7, "Inorganic Chemicals," of the revision of the United States Pharmacopœia X, I saw the methods suggested by me go through the various *Bulletins*, but in an effort to bring them into accord with the procedure in the U. S. P. X under the "Assay for Alkali Salts of Organic Acids," they have been weakened; the method for total citric acid now reads as follows:

"Boil down exactly 10 cc. of the solution to about 5 cc. to expel carbon dioxide, dilute with 15 cc. of distilled water and titrate with half-normal sodium hydroxide, using phenolphthalein T. S. as indicator: it requires not less than 9.5 cc. of the alkali for neutralization (minimum of acidity). Concentrate the liquid and transfer it completely with the aid of a little distilled water to a platinum or porcelain crucible, evaporate to dryness, and proceed as directed under the assay for alkali salts of organic acids," page 431.

The method on page 431 directs that:

"After allowing the carbonized mass to cool, moisten with distilled water, ignite again and repeat the moistening and igniting until a white residue is obtained. Then disintegrate the ignited mass with the aid of a stout glass rod and transfer the mass and crucible to a beaker. Add 50 cc. of distilled water and titrate with half-normal sulphuric acid, using methyl orange T. S. as indicator."

This procedure applied to the determination of total citric acid in **Solution Magnesium Citrate** is not only time-consuming but is apt to lead to erroneous results due to the directions to "concentrate the liquid and transfer it to a platinum or porcelain crucible." The danger of loss can be avoided by following the method directed below in which the initial titration, evaporation, ignition and final titration are made in a platinum dish or a sufficiently large porcelain evaporating dish, adding an excess of half-normal sulphuric acid to the white residue on ignition, heating on a steam-bath and by means of half-normal sodium hydroxide determining the free acid in the presence of one or two drops of methyl orange. The U. S. P. should adopt the following method which leaves little to be desired with reference to ease of manipulation and accuracy:

Into a platinum or porcelain evaporating dish of about 100-cc. capacity accurately measure 10 cc. of solution of magnesium citrate which has been freed from gas by pouring from one container to another, and 10 cc. of distilled water, after which evaporate on the steam-bath until the volume is reduced to about 10 cc. then titrate the free acidity with half-normal sodium hydroxide, employing phenolphthalein as indicator. Now evaporate the neutralized liquid on the steam-bath until practically all the liquid is gone and then carefully ignite, allow to cool, moisten with distilled water and evaporate to dryness on the steam-bath and ignite again. Repeat the moistening with distilled water, evaporating and igniting until a white ash is obtained and then add to it 30 cc. of half-normal sulphuric acid and heat on the steam-bath for about 15 minutes; allow to cool, and titrate with half-normal sodium hydroxide in the presence of one or two drops of methyl orange.

If magnesium is to be determined on the ignited material, carefully transfer this neutralized liquid which results from the determination of the total citric acid to a 250-cc. beaker, add distilled water to make about 100 cc., 20 cc. of diluted hydrochloric acid and complete the assay as directed in the U. S. P. In an effort to determine whether the results obtained on magnesium by this procedure agree with those obtained by the U. S. P. method and whether the results differ when the determination is made in platinum or porcelain a sample of solution of magnesium citrate was analyzed with the following results:

A.—Original solution ignited in platinum, the residue repeatedly moistened with distilled water, evaporated and ignited until a white ash was obtained, diluted hydrochloric acid and water added and the analysis completed by the U. S. P. method showed the presence of 1.5476 Gm. MgO per 100 cc.

B.—Neutralized liquid resulting from determining total citric acid in platinum dish, diluted hydrochloric acid and water added and the assay completed by the U. S. P. method showed the presence of 1.5660 Gm. MgO per 100 cc.

C.—Neutralized liquid resulting from determining total citric acid in porcelain dish treated as under *B* showed the presence of 1.5868 Gm. MgO per 100 cc.

The U. S. P. states that after the evaporation of the solution of magnesium citrate in determining the magnesium, the diluted hydrochloric acid be added and "filter if necessary." Since the above manipulation yields a white ash in one case and a liquid with everything in solution in the other it is not necessary to filter before proceeding with the assay.

In the JOURNAL AMERICAN PHARMACEUTICAL ASSOCIATION, 9, 253 (1920), I published some results which showed that it mattered very little whether the magnesium was determined after ignition of the Solution Magnesium Citrate or directly in the original sample. The revision committee disregarded these results and again directs that the assay be made by first igniting the sample. I again tested out this phase of the subject by assaying the sample for magnesium by accurately measuring 10 cc. of the sample solution of magnesium citrate into a 250-cc. beaker, adding 20 cc. diluted hydrochloric acid, about 100 cc. distilled water, 5 drops of methyl red indicator, sodium phosphate test solution, ammonium hydroxide and completing the assay as directed by the U. S. P. The analysis showed the presence of 1.5570 Gm. MgO per 100 cc. This same sample, following *Method A*, which is the official one showed the presence of 1.5476 Gm. MgO per 100 cc. These results confirm the former ones and prove that it is unnecessary to ignite the material before determining magnesium in solution magnesium citrate. In determining magnesium it is directed to "gradually add ammonia T. S. with constant stirring until slightly alkaline." In the above analyses this point was ascertained by means of methyl red indicator. The magnesium precipitate was filtered on asbestos in Gooch crucibles.

The total citric acid present in solution magnesium citrate can quickly and accurately be calculated as follows, if the quantity of magnesium, free citric acid and citric acid combined with bicarbonate are known: Multiply the grams of Magnesium as MgO per 100 cc. by the factor 3.4743, to the result so obtained add the free citric acid per 100 cc. found upon analysis and to this result add the acid (0.4997 Gm. per 100 cc.) corresponding to alkali in the solution of magnesium citrate as bicarbonate. Since practically all manufacturers and pharmacists who make Solution of Magnesium Citrate employ bicarbonate slugs of exact weight and purity there should be little variation in the factor for citric acid combined with bicarbonate. (0.4997 Gm. per 100 cc.)

The following case illustrates the accuracy of this method:

The above referred to Solution of Magnesium Citrate contained 1.5476 Gm. of Magnesium as MgO per 100 cc., therefore 3.4743 multiplied by 1.5476 equals

5.3768 Gm. citric acid combined with magnesium
Add 3.8872 Gm. free citric acid found upon analysis
Add 0.4997 Gm. citric acid combined with bicarbonate

Calculated Result.—9.7637 Gm. total citric acid per 100 cc. The amount of total citric acid found upon analysis was 9.7853 Gm. per 100 cc. These results check very closely.

SUMMARY.

1. The U. S. P. method for the determination of total citric acid in **Solution Magnesium Citrate** being unsatisfactory a better one is suggested.

2. Additional results confirm the findings published in 1920, that magnesium in **Solution Magnesium Citrate** can be determined much more rapidly and with as great accuracy with the original solution, ignition of the material being unnecessary.

3. The quantity of magnesium as MgO, free citric acid and citric acid combined with bicarbonate being known it is easy by means of a factory to calculate the quantity of total acid per 100 cc. of **Solution of Magnesium Citrate.**

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THE NEED OF GREATER ACTIVITY IN THE MAKING OF ANALYSES OF MEDICINAL PREPARATIONS FOUND IN THE OPEN MARKET AND OF A WIDER PUBLICITY OF THE ANALYSES.*

BY FREDERICK J. WULLING.

For many years Professor G. Bachman has been Chairman of the Committee on Drug Adulteration of the Minnesota State Pharmaceutical Association and, in that capacity has presented annually a comprehensive report setting forth the results of the analyses of many drugs and preparations found in the open market. These annual reports have been regarded as the most valuable, from a practical viewpoint, of all reports presented. They are actually used and consulted by members who constantly recognize their value. These reports are useful not only because of their value to the conscientious and careful pharmacist, but also because they, no doubt, discourage many of those who might otherwise make or use or sell drugs and preparations of inferior quality or strength. The work involved in the making of the many analyses reported upon annually, is very great and could not be done in volume except through the coöperation and assistance of many workers. Years ago, therefore, Dr. Bachman hit upon the idea of enlarging his course in the analysis and assay of drugs to include the practical application of his instruction to a larger number of U. S. P. and N. F. preparations and thus affording students increased practice in the application of the official tests for identity, purity and strength. This course has therefore not only increased the value of his instruction to students in the practical aspects involved, but has afforded opportunity, through the annual reports of the voluminous work done by himself, his faculty associates and students, to the pharmacists of the Northwest (for the reports are read and used in adjoining States) to learn the quality of medicines by the average pharmacists. Not only do pharmacists of the Northwest use and appreciate these reports but physicians and medical societies have recognized them and commented upon them most favorably.

To convey an idea of the scope of the analyses reported, let me say that the 1926 report (page 88 of the 1926 Proceedings of the M. S. P. A.) covered in all a total of 528 pharmaceutical preparations and chemicals. Samples were purchased from drug stores in various cities and sections of Minnesota. Dr. Bachman has made it a practice to purchase samples of drugs, chemicals and preparations recognized in the U. S. P. and N. F. whenever they are advertised at cut prices

* Scientific Section, A. PH. A., Philadelphia meeting, 1926.

and in about half of such purchases the analyses revealed the fact that the samples were below standard. A case is known where the knowledge thus revealed was used by a pharmacist against a cutter to the decided advantage of the conscientious pharmacist.

Here are a few random quotations or abstracts from Dr. Bachman's report:

"Our analyses of forty-one samples of Tincture of Iodine revealed the fact that eighteen were of official iodine and potassium iodide content, while the remaining twenty-three samples ranged from 6.3 per cent to 3.3 per cent of iodine. Several samples were minus potassium iodide.

"Thirty-three specimens of Cream of Tartar, purchased mostly in groceries but some in drug stores, were analyzed with the following results: twenty-six could be considered of proper purity while the others ranged from 94.8 to 87.6 per cent purity. Several gave positive tests for alum and starch.

"Thirty-five samples of Dilute Hydrochloric Acid varied in strength from 13.2 to 7.7 per cent of absolute acid. Five were above and two below the U. S. P. standard.

"Out of thirty samples of Dilute Sulphuric Acid analyzed, four were above standard, one assaying 16.9 and two below standard: 5.8 per cent. These results show that one sample contained nearly three times as much acid as another. Twenty-nine bottles of Solution of Magnesium Citrate were examined and only four were below the amount of magnesium oxide required.

"Out of thirty-five samples of Syrup Ferrous Iodide, five were somewhat below standard and all were clear and free from free iodine.

"Only one sample out of eight examined of Lugol's Solution was below strength.

"Thirty-six samples of Liquified Phenol were assayed. Practically all were several per cent stronger than standard. A package labeled 'Saturated Solution of Phenol' was purchased by a student in a country grocery store. On analysis it assayed 13.2 per cent phenol. This, we were told, was sold for full strength carbolic acid.

"Out of thirty-six samples of Hydrogen Peroxide examined, nine were below standard. One contained less than 2 per cent. Practically all of the thirty-nine samples of Fowler's Solution examined were found to contain the required per cent of arsenic trioxide in solution. The students who purchased the samples were instructed to note whether or not the pharmacists recorded the sales in the poison registers or asked any questions about the use of the solution. In only eight drug stores were questions asked as to the contemplated use of the solution and signatures on the poison registers required. The registration of the sale of Fowler's Solution is required by law in Minnesota.

"The examination of thirty-one samples of Spirit of Nitrous Ether, showed that seven were of required strength and the others from 2.6 to 1.1 per cent. It is no longer a theory but an established fact that this preparation if kept in completely filled small bottles in a cool and dark place, will keep for many months. This fact we have demonstrated to our satisfaction frequently at the College of Pharmacy.

"Five samples of 5-grain Aspirin Tablets out of thirty-three examined, contained less than four grains of the drug.

"Out of seven samples of Camphor Liniment examined, two were below standard (17.8 and 18 per cent) and one above (22.5 per cent).

"Eight samples of Spirit of Camphor bought from reliable drug stores were full strength.

"Two samples of Pure Lemon Extract assayed 3.4 and 5 per cent respectively. The Government requires not less than 5 per cent of oil.

"Six samples of Terpeneless Extract of Lemon were tested with amounts of citral found as follows: 0.24, 0.25, 0.30, 0.23, 0.20, 0.33. The Government requires the presence of not less than 0.20 per cent of citral.

"Eight samples of vanilla extracts and flavors were examined and all found to conform to the labeling."

The annual reports show a continual improvement in the quality of medicinal preparation, but the improvement is not what it should be. Medicines of inferior quality or strength should be unobtainable.

My thought is that all State associations and colleges of pharmacy could do work or more work along these lines and that greater publicity should be given to these reports and to similar ones from other sources. Some of the information thus brought to light should interest the boards of pharmacy who rightly are increasing their activities beyond the periodical examinations of candidates for licensure. There are sufficient instances of unfair competition based on inferior quality of drugs to justify interference in behalf of the public needing medicines and of the careful and conscientious pharmacists. I do not mean a too critical or meticulous restraint but a reasonable and fair one. If the unfair competitor is held to the observance of the right standard of his wares, he ceases to be an unfair competitor.

THE UNIVERSITY OF MINNESOTA.

THE QUALITY OF DRUG PRODUCTS.*

BY ROBERT L. SWAIN.[1]

I have made a study of 1300 individual drug products, collected for the most part from the retail drug stores of Maryland and subjected to analysis by the Bureau of Chemistry of the Maryland State Department of Health, with which division of the State Government I have had the honor to be connected, as Deputy Food and Drug Commissioner, for the past four years. Since the foundation of the Bureau of Food and Drugs in this Department, over 10,000 distinct drug products have been collected and analyzed, and out of this number I have chosen about the last 1300, inasmuch as this number represents our work in drugs and pharmaceuticals for the past two years, my thought being that this number would be of greater interest, as it would serve to show the conditions as they at present obtain. Incidentally, I might state that each of these products was purchased as any other purchase would be made, and in so far as I know none of them were sold with the knowledge that they were for official purposes. Also care was taken to secure, so far as possible, only such products as were manufactured or produced in the retail stores, so that an intelligent conception might be had of the care and skill which practicing pharmacists bring to bear upon their professional work. In this work, the official process of assay was used wherever offered, and in all other cases assay processes universally accepted were employed. Twenty-four pharmaceutical classifications are considered as follows:

Extracts (both powdered and solid)	Elixirs
Fluidextracts	Syrups
Tinctures	Magmas
Crude drugs	Antiseptics
Specially denatured alcohols	Ointments
Spirits	Powders
Solutions (Simple, complex, compound and concentrates)	Mixtures
	Digestive ferments
Tablets	Ampoules
Fixed and volatile oils	Filled capsules
Acids	Plasters
Liniments	Distilled waters

* Section on Practical Pharmacy and Dispensing, A. PH. A., Philadelphia meeting, 1926.

[1] Deputy Food and Drug Commissioner of Maryland.

Ninety-one different preparations, coming under one of the foregoing headings, are represented and, as above stated, make a total of 1300 different and distinct specimens. While such a number is not especially large, it is perhaps larger than the number of drugs collected and analyzed by any other official State agency in the same length of time, and can be considered as fairly representing the quality of many drugs and medicines, the majority of which reach the public through the medium of the doctor's prescription.

Out of the total number of 1300 specimens, one hundred fifty-three were found to be more than ten per cent below the official or professed standard, representing a percentage deficiency of about 12%, which figure, I feel confident, is as low if not lower than reported by other States. This figure is all the more remarkable when it is considered that the list of products studied includes many of an unstable, or at least variable, composition, such as Hydrogen Peroxide, Aromatic Spirit of Ammonia, Chloroform Liniment, Spirit of Nitrous Ether and others. With such products eliminated and the percentage of deficiency based upon preparations more or less fixed and not subject to certain deterioration, the number of products showing a deviation from standard in excess of 10% is found to be 8.6%.

I have prepared a table showing the percentage of deficiency found for each item enumerated:

Aromatic Spirit of Ammonia	28.0%	Fowler's Solution of Arsenic	2.0%
Acetylsalicylic Acid	None	Tincture Iodine	10.0%
Camphorated Oil	8.2%	Lime Water	8.0%
Chloroform Liniment	30.0%	Solution Magnesium Citrate	16.0%
Tincture Ferric Chloride	1.3%	Tincture Nux Vomica	21.0%
Hydrogen Peroxide	17.0%	Essence of Peppermint	14.0%
Syrup Ferrous Iodide	18.0%	Spirit of Camphor	None

While the above headings comprise only a fraction of the different products studied, they make up by far the larger portion of the total, and in each instance, a sufficient number of products was analyzed to make a satisfactory statement. For instance, one hundred and ninety-five Camphorated Oils were collected, and can be considered as representing that many of the six hundred or more drug stores of the State, and of this number 92% were found to be in accordance with the official standard. Seventy-seven samples of Tincture Ferric Chloride were collected, and only one was found to be deficient in iron content. The figure for Hydrogen Peroxide is based upon ninety-three individual lots. Three hundred and fifty-six samples of Lime Water were collected and analyzed, and out of this large number 92% were found in keeping with the Pharmacopœial standard. Stated in another way, only twenty-seven out of the total of three hundred and fifty-six samples of Lime Water were ten per cent deficient in calcium hydroxide. Seventy-three specimens of Solution of Magnesium Citrate were studied, and eighty-six per cent of these were found up to the legal standard.

The study of Chloroform Liniment is based upon a total of one hundred and seventy-three samples, and of this number, forty-four were found deficient in chloroform; eleven deficient in both chloroform and camphor; five deficient in camphor alone. Of course, in a preparation composed almost entirely of volatile constituents, deviation from formula is to be expected at times. In this connection, I think it would have been well for the newly revised Pharmacopœia to have de-

manded not less than twenty-five per cent of chloroform as a standard for this product, basing this requirement upon the present formula. Such an act would have given official recognition to the volatile nature of the compound, and would also have set a limit of deviation. The Pharmacopœia sets no standard for this product other than the quantities in the formula, and the matter of legality is left to the judgment of the supervising agency. At all events, in preparations such as Chloroform Liniment, the customary toleration of ten per cent limitations, is manifestly impossible to maintain. Another point of interest in this product is found in the fact that, in making Chloroform Liniment from chloroform and soap liniment, an opportunity is afforded to gage the composition of the soap liniment so far as its alcoholic content is concerned. If the resulting product is perfectly clear, it can be accepted as indicating that the soap liniment is up to standard in alcohol. Any reduction in the alcohol content of Soap Liniment is sure to affect the solubility of chloroform, especially in such proportions demanded in the official Chloroform Liniment. In the total number of Chloroform Liniments considered here only one spurious sample was found. In one case the product was shown to consist of cotton seed oil to which a few drops of chloroform had been added.

During the two years covered by this study, no sub-standard lots of Acetylsalicylic Acid Tablets or Spirit of Camphor have been found.

Confessedly, the matter as presented here is inadequately covered, and in a sense superficially studied, as I have made no attempt to go into exhaustive details. However, I feel satisfied that the figures submitted are such as to reflect much credit upon the retail practicing pharmacists of my State, and they are sufficient in my judgment, to refute the statement, all too frequently made, that the products dispensed by the retail pharmacists are grossly adulterated or carelessly prepared My observations are based upon an experience covering the past four years, during which I have had unusual opportunity to study this matter, and I respectfully submit this brief study of several hundred drug products as showing that the official standards are met to an extent quite remarkable.

THEORETICAL STRUCTURE OF THE CORRECTION FACTOR AS APPLIED IN THE MENTHOL ASSAY OF PEPPERMINT OIL—WITH A NOTE ON THE ASSAY OF OIL OF ROSEMARY.

BY SIMON MENDELSOHN.

The present official assay procedure for the valuation of peppermint oil is a modification of the method originally proposed by Power and Kleber[1] in 1894. The formula for the final reduction of the results of an assay has in the U. S. P. X been rendered more complicated by the application of the correction factor $[1 - E \times 0.0021)]$ in accord with the newer requirements therein specified.

Example: (Specified indication of analytical results in the assay of oil of peppermint).

$$\text{U. S. P. IX } \frac{A \times 0.07808 \times 100}{B-(A \times 0.021)} = \frac{A \times 7.808}{B-(A \times 0.021)} = \text{percentage of menthol.}$$

[1] *Pharm. Rund.*, 157 (1894); *Z. anal. Chem.*, 33, 762 (1894).

$$\text{U. S. P. X } \frac{A \times 7.811}{B-(A \times 0.021)} \times [1-(E \times 0.0021)] = \text{percentage of } \textit{total} \text{ menthol,}$$

where A[1] = quantity of $N/2$ alcoholic KOH required for saponification of the ester (menthyl acetate, $C_{10}H_{19}C_2H_3O_2$),

B = weight of acetylized oil used for the actual test,

E = percentage of esters calculated as menthyl acetate,

0.021 = correction for the increase in weight of the oil due to acetylation, in terms of $N/2$ alkali. In other words, this factor represents the equivalent of 1.0 cc., of $N/2$ alkali in terms of the acyl radicle ($CH_3C{:}O$) in combination with the menthol to form menthyl acetate (m. w. of acyl radicle = 43).

Equivalent in terms of $N/2$ KOH $= \frac{43}{2} = 21$ Gm. per L; therefore equivalent of 1.0 cc. of $N/2$ KOH $= \frac{21}{1000} = 0.021$ Gm.,

$7.811 = 100 \times 0.07811$, where the latter term = the equivalent of 1.0 cc. of $N/2$ KOH in terms of menthol; 1 molecule of menthyl acetate = 1 molecule of menthol; M. w. = 156.21.

Equivalent of 1 L $N/2$ KOH $= \frac{156.21}{2} = 78.11$ Gm.; hence equivalent of 1.0 cc., $N/2$ KOH $= \frac{78.11}{1000} = 0.07811$ Gm.

N. B. The disparity between the values 7.808 and 7.811 is due to differences in the atomic weights of the elements comprising the molecular constitution of menthol—as included in the respective Pharmacopœias.

A comprehensive survey of pharmaceutical treatises published or revised since the advent of the U. S. P. X disclosed the failure of these texts to elucidate the principles or manner of calculating the correction factor as specified in the official monograph.

The formula as stated in the U. S. P. IX disregarded the presence of the small amount of menthyl acetate invariably associated with oil of peppermint and was derived on the assumption that all of the menthol was present in a free or uncombined state. The presence of ester up to 10.0 per cent produces an appreciable error which, however, is now compensated for by the modified formula in U. S. P. X as originally recommended by F. D. Dodge[2] and others.

The derivation of the new formula is demonstrated in detail as follows:

Let X = per cent of total menthol in the oil,

e = per cent of menthyl acetate,

A, B = as in U. S. P., or as previously above cited;

then noting that menthyl acetate contains 78.0 per cent of menthol and the latter in turn yields 127.0 per cent of the ester, it becomes evident that

(1) $$X-0.78e = \text{free menthol;}$$

the acetylated oil from 1 part of original oil will, accordingly, amount to

(2) $$1 + 0.27(x-0.78e) \text{ Gm.,}$$

representing all of the original menthol, plus 27.0 per cent of the free menthol as ester.

[1] This represents the difference between the $N/2$ H_2SO_4 V. S. used in titration, and the amount of $N/2$ KOH V. S. originally used. (See U. S. P. X, p. 262.)

[2] Personal communication to the writer April 1926.

(3) Then, $\frac{X}{1 + 0.27(X-0.78e)}$ = percentage of total menthol in the acetylated oil.

(4) But by assay, $\frac{0.078A}{B}$ = percentage of menthol in the acidulated oil; also,

(5) $\therefore \quad \frac{X}{1 + 0.27(X-0.78e)} = \frac{0.078A}{B}$, whence,

(6) $X = \frac{0.078A + 0.021A(X-0.78e)}{B}$. This equation through the indicated reduction assumes the following consecutive forms:

(7) $X = \frac{0.078A + 0.021AX - 0.0164Ae}{B} =$

(8) $X = \frac{A(0.078 + 0.021X - 0.0164e)}{B}$ which on transposing assumes the form

(9) $X - \frac{0.021AX}{B} = \frac{A(0.078-0.0164e)}{B}$, whence,

(10) $\frac{BX}{B} - \frac{0.021AX}{B} = \frac{A(0.078-0.0164e)}{B}$.

Cancellation of B terms in the fraction $\frac{BX}{B}$ and clearing of fractions,

(11) $= \frac{X(B-0.021A)}{B} = \frac{A(0.078-0.0164e)}{B}$.

Simplifying, equation (11) yields

(12) $\frac{BX(B-0.021A)}{B} = \frac{B.A(0.078-0.0164e)}{B}$ which on cancelling B terms outside of parentheses,

(13) $= X(B-0.021A) = A(0.078-0.0164e)$ and

(14) $X = \frac{A(0.078-0.0164e)}{(B-0.021A)}$,

Multiplying equation (14) by 100 and substituting E for 100e =

(15) $X = \frac{A(7.8-0.0164E)}{(B-0.021A)}$ = percentage of total menthol in original oil. This formula in turn resolves itself to

(16) $X = \frac{A \times 7.8(1-0.0021E)}{(B-0.021A)}$ which in turn resolves itself to

(17) $\frac{A \times 7.8}{B-0.021A} \times [1-(E \times 0.0021)]$ as stated in the U. S. P. X.

The same correction factor is applied to the analytical result in the assay of oil of rosemary, where, however, the object sought is the percentage of *total* borneol ($C_{10}H_{17}OH$); E = esters calculated as bornyl acetate ($C_{10}H_{17}C_2H_3O_2$), while the other symbols and constants retain similar significance as previously stated for the calculation of the menthol assay.

Summarily, the official assays for oils of peppermint and rosemary are based on the following assumptions; that

(1) Menthol or borneol are the only alcohols present; that
(2) Menthyl or bornyl acetates are the only esters present, and
(3) That menthol or borneol are the only constituents reacting with acetic anhydride.

Inasmuch as none of these assumptions is strictly correct,[1] all of the calculations incident to correction of assay data could readily be obviated, by employing the simpler expedient as proposed by (E. J.) Parry.[2] Proceed in the following manner with an oil containing both esters and alcohols:

(I) Estimate the amount of combined alcohols by a preliminary saponification of the esters.

(II) Saponify 20.0 Gm. of the sample with alcoholic KOH solution, add H_2O and wash the separated oil now free from esters, dry over $KHSO_4$ and

(III) Estimate the total alcohols (now all free) in 2.0 to 5.0 Gm. of (II).

(IV) The amount of alcohols as found in (III) refers to the *saponified* sample; to calculate the total alcohols in the original sample necessitates a correction by allowing for the reduction in weight by saponification of the original oil. This reduction can be ascertained by calculation from the amount of alkali used for saponification in (I).

(V) Deduct the combined alcohols found in I from the total alcohols determined in (IV); the difference represents the amount of free alcohols.

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FURTHER STUDY OF THE TANNIN OF HEUCHERA AMERICANA, LINNE.*

BY JOSIAH C. AND BERTHA L. D=G. PEACOCK.

This paper is intended to review, and will be found to revise in some particulars, the results of an investigation of the root of *Heuchera Americana*, published by one of us (J. C. P.) in *American Journal of Pharmacy*, April 1891.

Working then with the methods in general use for isolating and purifying tannins, as outlined in that paper, there was obtained a dark brown mass, which was but slowly and only partly soluble in cold water; and while readily soluble in hot water a large proportion of the dissolved matter separated when the solution was allowed to cool.

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[1] This is readily apparent on consideration of the complex character of American oil of peppermint in particular, which according to "Schimmel & Co.'s Report" (April 1897) consists essentially of the following:

Acetaldehyde,
Iso-valeric aldehyde,
Dimethyl sulphide,
Amyl alcohol,
Iso-valeric acid,
Pinene,
Phellandrene,
Cineol,
Limonene,
Menthone ($C_{10}H_{18}O$),
Menthol,
Menthyl acetate,
Menthyl iso-valerate,
a-lactone ($C_{10}H_{16}O_2$),
Cadinene.

[2] "Allen's Commercial Org. Analysis," 5th edition, Vol. IV, p. 596.

* Read before Pennsylvania Pharmaceutical Association, 1927.

The color of this educt and its solubility behaviors toward water taken into consideration with its reactions to gelatin and ferric salts marked it plainly as a phlobaphene. A specimen of a similar substance from the present work is here shown[1] for the opportunity to contrast the result of 1927 with that of 1891.

Within two years after the publication of these results, Henry Trimble and Josiah C. Peacock adapted certain suggestions, which had been made by others in the literature of the tannins, into a decidedly improved and simplified method of isolating and purifying certain of these principles.

The most noteworthy of these utilizations was that of acetic ether (ethyl acetate) for the removal of tannin from water solution into which it is repeatedly brought as a means to gradual separation from the less soluble plant constituents, especially from resins and cold water insoluble phlobaphenes.

Although such use of acetic ether had been proposed by Löwe in 1872, through lack of application, its several very practical advantages over the troublesome and often disappointing fractional precipitation with lead salts (which procedure was so thoroughly ingrained in plant chemistry methods) had not been recognized. The prime utility and function of the acetic ether is simply that of an immiscible liquid with selective solvent action, while its other particular advantage is its easy manageability in recovery of solvent to obtain the extracted matter.

Reports on the satisfactory use of this simplified method were made in the following joint contributions by Trimble and Peacock: "Canaigre Tannin," *A. J. P.* (April 1893); and "The Preparation of the Oak Tannins, etc.," PROCEEDINGS A. PH. A., p. 110 (1893), and *A. J. P.* (Sept. 1893); while other references to its successful use and practical value were made by Trimble in the second volume of his monograph "The Tannins" published in 1894. Also during the next few years, it was used by him and by his students on a considerable variety and number of tannin-bearing materials as attested by the pages of the *American Journal of Pharmacy* over that period.

To return now to the stated object of this paper, as the proximate source of phlobaphene is expected to be a cold water or plant-sap soluble tannin, ever since the aforementioned adoption of acetic ether, it has been thought desirable to try the process on a commercial sample of this drug in order to ascertain the presence of a tannin of that nature; especially since, at that time, observation of the freshly collected root while drying noted the likelihood of much of the phlobaphene of the air-dried drug being an alteration product which is formed as the moisture is gradually dissipated.

For the purpose of this work, a quantity of the identified drug was reduced to dust-like powder. In milling, there was a loss of approximately 8 per cent of unground drug, which was discarded.

The powdered drug showed 10.55 per cent of moisture and 11.11 per cent of ash.

To examine the drug for cold water soluble tannin, one kilo of the dust-like powder was macerated at room temperature with five times its weight of water, with frequent stirring during twenty-four hours. The mixture was then strained and the resulting fluid filtered to obtain a brilliantly clear cold water infusion.

This infusion was shaken with several successive portions of acetic ether, which

[1] Shown at the meeting.

removed tannin and some other substance that at this stage prevented the tannin, in recovery of solvent, *in vacuo*, from drying out as a porous or puffed-up residue; instead, a varnish-like formation was obtained.

By treating this residue with cold water, filtering with the aid of paper pulp to clear, shaking out with acetic ether and removal of this solvent by distillation under reduced pressure, the quality of the tannin through frequent repetition of this process was gradually improved until the degree of refinement exemplified by the sample submitted herewith was attained.

Next, this purified tannin was dissolved in cold water and the resulting solution shaken in succession with petroleum ether, chloroform, benzol and ether, in attempt to further purify the tannin, expecially through removal of crystalline acids which are frequently associated with the tannins. But only a minute amount of such substance was removed by any or by all of these solvents. From aqueous solutions this tannin is not removed in any considerable quantity by ether. After these treatments the tannin was again taken from the water solution by means of acetic ether. The sample here shown was obtained by evaporating the acetic ether from such solution, after exhaustion of air from the flask, and thereafter dissolving the then similar residue in a small amount of acetone and repeating the distillation, *in vacuo*, as a means of expelling an acetuous odor which clings to tannin that is dried out of acetic ether.

The outcome of this experiment clearly shows that the root of *Heuchera Americana* yields to cold water a tannin that is distinctly different in appearance and solubility from the phlobaphene material which was reported in 1891, and which was the best that the then used methods would afford.

The specimen from the present work conforms to the description given in sensible properties by the U. S. P. X, for gallotannic acid, from which tannin, however, it differs in certain physical and chemical effects as hereinafter mentioned. If this specimen of it is contaminated at all with crystalline or other substance, the amount of such is extremely minute.

Like the official gallotannic acid this tannin from *Heuchera Americana* is readily soluble in cold water, hot water, glycerin, acetic acid, alcohol, acetone and acetic ether. It is insoluble in chloroform, benzol or petroleum ether. It is dissolved by both ammonium and potassium hydroxides.

Its aqueous solutions are acid to litmus. They are promptly reddened and made turbid by addition of hydrochloric acid through production of phlobaphene; but are not so affected by oxalic, tartaric or gallic acids, nor by acetic acid in which, even in weak dilutions, all phlobaphene formations encountered in this work were soluble, the resulting solutions withstanding addition of water without precipitation.

Its aqueous solution gives flesh-colored precipitates with gelatin, dark-blue colors and precipitates with ferric chloride solution, and whitish flocculent precipitate with lead acetate. An excess of the ferric reagent, or a solution of it that contains uncombined hydrochloric acid produces greenish colors and precipitates.

This tannin decomposes barium carbonate with production of a soluble salt of that base.

Such are some of its properties in common with gallotannic acid, but this tannin from *Heuchera Americana* gives a precipitate with bromine water; it also gives

a whitish precipitate with calcium hydroxide which upon addition of more of the reagent becomes bluish or slate-colored and finally assumes a reddish-brown or rusty color. Again, unlike gallotannic acid, it dissolves readily and freely in isopropyl alcohol.

The ease and degree of its solubility in ether appear to depend upon its state of hydration, or it may be that the occurrence of solution depends largely upon the fact that the cold induced through the evaporation of the ether applied to it brings about the condensation of sufficient moisture to cause the tannin to dissolve. An exact explanation is difficult to reach, since this tannin upon application of temperature above 100° C. tends readily toward phlobaphene formation. On account of that, it is not feasible to dehydrate the tannin without experiencing some change to phobaphene; but, when thus dried, the tannin was much less disposed to dissolve in ether.

While this tannin, in common with gallotannic acid, gives blue colors and precipitates with ferric salts, it differs under the effect of mineral acids in yielding a red insoluble phlobaphene as shown by the following experiment: Five Gm. of the tannin were dissolved in water, this solution shaken with ether to remove any contained crystalline principles (such as the acid derivatives of phenols which are frequently found associated with the tannins); the liquid was warmed to dissipate the last portions of ether, and then mixed with enough hydrochloric acid to represent 10 per cent of HCl gas in the mixture; after which the liquid was heated on a boiling water-bath until the brick-red phlobaphene that was gradually formed seemed to have reached a fixed amount. The filtered liquid even upon cooling had a wine-red color; upon shaking it with petroleum ether, chloroform and ether in succession, only a trifling amount of crystalline matter was extracted, which result would seem to indicate the likelihood that this substance (which was revealed at several junctures in the work, but never in more than minutest trace) is not an hydrolysis product of the tannin but evidently a principle that exists in the dry drug. From any of its solvents, it appeared almost invariably as needles radially arranged or interlaced. Similar crystals will be mentioned with other phases of this work. The brick-red phlobaphene was soluble in acetic ether, acetone and alcohol.

When an aqueous solution of this tannin is saturated with sodium chloride, the tannin is thrown out as a flesh-colored precipitate, which remains undissolved in contact with acetic ether, but the jelly-like formation that obtains upon addition of the acetic ether, when drained to remove any superfluity of the last, is found to be almost entirely soluble in acetone, as elsewhere mentioned for other phlobaphene formations from this drug.

In 1891, it was customary to group with gallotannic acid those tannins which give blue colors and precipitates with ferric salts. And, on that basis, at that time, colorless crystalline extractive which was removed by ether, sp. gr. 0.725, and which in water solution gave a blue color with ferric salts was generally interpreted as gallic acid. As the result of following these impressions, it was stated in the paper then published that such ether extracted traces of gallic acid from the freshly gathered roots and a greater proportion from the dried root.

But, upon finding that the cold water soluble tannin of this drug is under certain circumstances soluble in such ether, it at once became desirable to review the

formerly used method and the statement as regards the finding of gallic acid.

Later experience has taught that, in the presence of a tannin which gives a blue color with ferric salts, it is extremely difficult, if indeed possible, by use of such ether alone, to determine with certainity the presence or absence of minute amounts of gallic acid, since agitation of aqueous solutions containing only tannin with immiscible solvents disposed to remove gallic acid may remove enough tannin through inclusion of some of the aqueous layer by the other solvent to give a blue color, and thereby mislead. And, now with the knowledge before us that the cold water soluble tannin of *Heuchera Americana* is capable of solution in ether, sp. gr. 0.725, it is clear why evidence of gallic acid was then found. But since other evidence hereinafter adduced shows far more plainly that gallic acid is not present in the drug, it is fully realized that its presence as stated 1891, was a wrongly drawn inference and one that we would now correct.

Moreover, the occurrence or production of phlobaphene with accompaniment of gallic acid has grown to be more and more improbable because correspondingly inconsistent with observed fact, as acquaintance with a greater variety of tannins has been acquired.

Again, in 1891, precipitation of tannin with gelatin and weighing of precipitate was the usual procedure for determining the amount of tannin.[1] But soon thereafter the hide-powder method of assay was adopted as preferable for comparing tanning values.

As the hide-powder method, which frequently sheds light on the constituents of tannin-bearing materials, had not been applied in the previous work, it was turned to as another approach to the question of the presence of gallic acid, and toward the settling of this matter it proved to be particularly helpful.

For this purpose, infusions of ten per cent of the dust-like powder was prepared with both cold and hot water. The cold infusion was made by repeated stirring during six hours. The hot extraction was had by boiling the powder with water for one hour. Both liquids were filtered. The hot one was allowed to cool; whereupon it deposited considerable sediment and was therefore clarified with the aid of paper pulp.

Both solutions were brilliant, wine-red (that prepared with hot water had the more color), had odor of the drug, were strongly astringent and showed a strongly acid reaction to litmus. Both possessed a pronounced disposition to froth when shaken.

Both solutions gave abundant flesh-colored precipitates with gelatin solution; blue and blue-black colors and precipitates with ferric chloride; and heavy pale-buff precipitates with lead acetate. Hydrochloric acid slowly caused precipitation in both liquids. Acetic acid did not precipitate either of the solutions.

The cold water infusion showed 19 per cent of dissolved solids; while the clarified hot water decoction was found to contain 20 per cent. From the cold water preparation, hide-powder removed solids which indicated 10.85 per cent of tannin or tanning value; from the hot water solution 12.82 per cent. All four of these figures refer to the air-dried powder.

The detannating effect of the hide-powder was rapidly realized and was very striking. Upon contact with the hide, the wine-red liquids almost instantly lost their colors; after maceration for an hour, the fluids were practically water-white,

were found to have given up their astringency and almost all of their taste, as well as approximately five-sixths of their original titratable acidity. Both the original and the hide-treated liquids rapidly decolorized potassium permanganate solution, the former to several times the extent to which the latter did this.

When the fluids from this hide treatment were filtered entirely clear, they showed no precipitate with gelatin, but a slight precipitate with lead acetate solution, and only a very slight and extremely fleeting color reaction with ferric chloride, as follows: First, a mere flash of purple or violet, changing instantly to blue and passing with almost equal quickness into green or greenish yellow. The blue color produced by ferric chloride and gallic acid is distinctly different from this behavior through being appreciably permanent.

The liquids thus detannated were again treated with hide-powder to ascertain whether all reaction to ferric chloride would be removed by further effect of this agent. Such second treatment made no difference in the behaviors toward gelatin, lead acetate or ferric chloride, thus necessitating the attribution of these behaviors to causes other than tannin, unless they are due to a trace of tannin that is held in solution by other constituents of the drug.

However, this result is especially interesting as evidence of the absence of gallic acid: In addition there will be other evidence which shows that gallic acid is not present in this drug.

Attempts to observe by dialysis the behavior of infusions of the root and of solutions of the purified cold water soluble tannin were vitiated through prompt formations of phlobaphene, presumably from effect of some disturber in the parchment that was used as septum; but, in every instance, whether with infusion or solution of the tannin, the outer liquid promptly showed, with ferric chloride, the same or a similar reaction as that described under the experiment of detannating: namely, a fleeting tinge of blue (here usually without precedence by purple or violet) that quickly passed into a greenish or into a yellowish tint, when the latter, being little more than what the color of the reagent itself imparted.

To study further the nature and amount of the substance to which this ferric chloride reaction is due, and to learn more regarding the behavior of the tannin constituents toward solvents, as also to note the amounts of extractive removed, a kilo of the dust-like powder was exhausted with the following solvents: chloroform, ether, acetic ether and acetone. These were used in the order given; the drug being freed of the adhering solvent before the next was applied.

Chloroform Extract.—The chloroformic percolate was of a pinkish color, and upon evaporation left a blood-red residue amounting to 0.75 per cent of the drug. When this extract was treated with petroleum ether of low boiling point one-half of its amount dissolved, and upon evaporation of this solvent, was found to consist largely of fatty semi-solid of dark amber color. This mass was entirely soluble in ether, and water removed from it a minute amount of colorless needle-shaped crystals, an aqueous solution of which did not precipitate gelatin but gave with ferric chloride the transient color reaction which has been described in mention of similar crystals obtained by other means.

The frothing of the fatty portion when shaken with water strongly suggested the presence of saponin.

The other half of the chloroformic extract was a dark reddish brown residue

of mixed substances, which were entirely soluble in benzol and alcohol, but insoluble in water; behaviors which indicate resinous matter.

Ether Extract.—Applied after chloroform, ether U. S. P. removed but a trifle of extract, approximately 0.07 per cent, or one-tenth of that removed by chloroform. The percolate exhibited but little color until concentrated by distillation for recovery of solvent, when it showed a golden-yellow, varnish-like residue. Petroleum ether dissolved about one-fifth of this residue; after which benzol removed but a trifle; and water applied next took into solution the minute amount of tannin which had been extracted.

It is interesting to note that while U. S. P. ether extracts but a minute amount of tannin from the air-dried drug, the purified cold water soluble tannin will dissolve in that ether, as already mentioned.

Acetic Ether Extract.—Following chloroform and ether, acetic ether of 99 per cent strength was applied. The percolate was of light amber tint and yielded but 0.26 per cent of a flesh-colored powdery, scaly or granular residue upon recovery of solvent. Toward water this substance behaved like phlobaphene, being but slightly soluble and imparting but a tinge of color to the liquid but which gave reactions for tannin with ferric chloride and gelatin. This extractive was not soluble in benzol, but dissolved readily in acetone or alcohol.

Now, strangely enough, the purified cold water soluble tannin is instantly and freely soluble in acetic ether, as though again, as in the case of ether, pointing to hydration as a likely essential to solubility.

Acetone Extract.—After extracting the drug with the three mentioned solvents, acetone U. S. P. was applied. From the start of percolation, the solvent had a sherry-wine color, but this gradually decreased in intensity until the percolate was very pale amber. By this time but little solids were being removed, as learned by recovering of solvent from the successive lots of percolate. Up to this stage, acetone had extracted 7.17 per cent of solids, which later proved to be almost entirely cold water soluble tannin.

But at this juncture, with everything pointing to completion of practical exhaustion, the percolate suddenly regained its original color and in greater depth, and by continuing the process until exhaustion was again apparently accomplished, fully three times as much solids were removed. As extraction progressed, the solids so removed showed increasing tendency toward phlobaphene nature.

From the extractive which followed this change in the action of acetone, petroleum ether removed a minute amount of substance that formed colorless needles, which were soluble in water and gave the transient bluish and greenish colors to which reference has been made.

The extractive obtained by means of acetone before this unusual occurrence was of a slightly reddish color, porous and had the appearance of a mass of yellowish white tannin with some admixture of reddish phlobaphene; and this it proved to be upon treatment with water which dissolved it with the exception of 0.40 per cent of phlobaphene and resin.

After this strange occurrence, the continuance of percolation to exhaustion was a protracted process. It was carried on over several weeks during the greater part of which period there was removed an apparently fixed quantity of dissolved solids per volume of solvent, which, though trifling in each portion of percolate,

totalled a considerable amount, and seemed to imply some peculiar change in the drug with production of extractive that was but sparingly soluble in acetone, each lot of which was accordingly saturated—the most plausible explanation for the unending supply of what upon recovery of solvent appeared to be a mixture of porous phlobaphene and a varnish of other substance.

Percolation was eventually discontinued for the reason that only a minute amount of tannin which would dissolve in water was being extracted. But it should be noted that acetone was still removing matter which, treated with cold water and this solution filtered, continued to precipitate gelatin and react characteristically also with ferric chloride for tannin.

In order to confirm this peculiar behavior with acetone, another portion of the original drug powder was percolated with another lot of chemically pure acetone; the result was identical. As this behavior was suspected as due to a gradual accumulation of water from this solvent with an ultimate disruption of the cells of the drug, or some similarly occurring other change that favored extraction, another portion of the original drug powder was moistened with just sufficient water to make it damp to the touch, and then percolated with acetone. With this preliminary treatment made, acetone forthwith exhausted the drug to the limit of its solvent effect.

In the purification of the tannin extracted by means of acetone, a phase was reached wherein acetic ether perceptibly lessened or lost its ability to remove all of the tannin from water solution; the situation seems to indicate that there was a portion of the tannin (obviously most closely approximating the cold water soluble tannin) which was readily removable while another portion (of more distinctly phlobaphene nature) was not readily given up to acetic ether by the water solution.

When such juncture was reached, the addition of sodium chloride to saturation instantly brought about phlobaphene formation and precipitated the phlobaphene, which remained undissolved in contact with acetic ether, but which dissolved almost completely in acetone, and, upon recovery of same, showed as a porous residue with red-brown color that tended to deepen with each repetition of the process.

After prolonged extraction with acetone, the marc was freed of this solvent and then treated first with cold water and thereafter with boiling water. Both treatments removed tannin-reacting matter as shown by gelatin and ferric chloride. There was an abundance of starch in the hot water extract.

It is remarkable that while acetic ether readily dissolved every form of water soluble tannin so far obtained from *Heuchera* and most of the phlobaphene formations, still when it is applied directly to the drug it removes but little of either, as stated. And, again, while ether dissolves the purified cold water soluble tannin, it does not dissolve the phlobaphene forms which result therefrom, nor, as pointed out, does it extract any considerable amount of either form of tannin from the drug. But, as proved by actual trial with both acetic ether and ether, if the powdered drug is first moistened with water, as in a similar experiment mentioned for acetone, tannin is removed in far greater proportion—further confirmation of hydration as requisite to these solubilities.

As compared with these behaviors acetone eventually extracts and, subsequent to any purification or phlobaphene formation, dissolves all forms of tannin from *Heuchera*, which (as the specimens show) vary in color and physical form assumed

from pale-buff or pinkish flesh-colored powder through porous masses (that possess the appearance of incinerated ferric oxide) to a condition of transparent gum-like formation which suggests kino or red (eucalyptus) gum.

The commercial ether, sp. gr. 0.750, used in 1891 to extract the drug for tannin was favored by the presence of the ten per cent of alcohol which it contained, as all of the tannin and phlobaphene of *Heuchera* are soluble in alcohol.

As said in the beginning of this paper it was for the purpose of reviewing, in the light of improved methods, the inferences drawn in 1891, that this work was undertaken. From the evidence set forth herein, it is plain that the reaction on which the presence of gallic acid was then predicated was due to a trace of tannin or to an associated crystalline substance that is present in minute amount and which gives a fleeting bluish color reaction with ferric chloride instead of the more permanent color caused by gallic acid. Gallic acid is not present.

Phlobaphene production shows that the tannin of *Heuchera Americana* is not gallotannic acid.

The isolation from *Heuchera* of a cold water soluble tannin of its type, in the highly refined state which the accompanying specimen reflects, affords much encouragement for the separation and study of this class of plant principles, as a practical way through which to comprehend some of the changes which occur in the curing of astringent drugs, and as the means to a better understanding of the preparations which are made from them.

CZECHOSLOVAK PHARMACOPŒIA.

The chemical sub-committee of the Czechoslovak Pharmacopœia commission has reached agreement on the following points: (1) Solubilities are to be expressed in terms of weight, and not of volume. (2) As the standard temperature for specific gravities 20° C. has been adopted, and for water 4° C.; measuring vessels are to be graduated at 20° C. (3) Volumetric solution of potassium hydroxide is to be used in acidimetry; as indicators, phenolphthalein, methyl orange and methyl red. (4) Structural formulas of organic compounds are to be included. The pharmacological and biological sub-committee proposed the inclusion in Czechoslovakia's first national Pharmacopœia of the following serums: Diptheria antitoxin, tetanus antitoxin, anthrax, meningococcus, scarlet fever and fowl cholera serum. Two of the members of this sub-committee were entrusted with the task of drawing up a report in which the serums to be stocked in all pharmacies are specified.—*Chem. & Drug.*, June 11, 1927.

DRUGGISTS' RESEARCH BUREAU.

It is said that approximately 20,000 people in the drug industry have already enrolled as members of the Druggists' Research Bureau. Over one-half of these members are retail drug-store proprietors, about one-quarter are clerks and the remaining number represent wholesalers, manufacturers, their salesmen, pharmaceutical journalists, college men, advertising agencies and other interests, according to the August 2nd bulletin issued by the National Wholesale Druggists' Association. The membership campaign is progressing rapidly and the directing committee of the Bureau is confident that the total membership will reach their fondest hopes.

Druggists' Research Bureau booklets, application cards and other information may be obtained by addressing the Bureau at 51 Maiden Lane, this city.

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THE VALUE OF THE RECIPE BOOK TO THE PHARMACIST.*

BY J. LEON LASCOFF.

At last the pharmacist is in possession of the latest editions of the U. S. P., N. F. and also the Dispensatory. I am happy to report that he will soon be in possession of a new book, the so-called A. PH. A. Recipe Book or R. B. There is no question in my mind but that this book will be of great value to the pharmacist. It is going to be a companion in the daily routine of his work. While there are to-day quite a number of formula books published, this book, in my opinion, is entirely different from all the others.

It's true that it took a long time to compile these formulas and while I am not here to criticise some of the former members of the committee who did not take an active part in the work, nor to criticise the fact that previously very little appropriation was made to edit the book, the fact remains that this book has been turned over by the editor to the Publication Committee and I am sure that it will go into print very shortly.[1]

In May 1920 I had the honor to be elected Chairman of the A. PH. A. Recipe Book Committee. In 1923 at the Buffalo meeting I turned over to the Association the book containing 1500 formulas. At that meeting Prof. Griffith was elected the Editor. The compiling of formulas and experimentation for this Recipe Book was done voluntarily and with very little expense to the Association.

The Recipe Book will be divided into eleven parts as follows:

Part 1—Pharmaceutical Formulas.
Part 2—Hospital Formulas.
Part 3—Dental Formulas.
Part 4—Laboratory Reagents.
Part 5—Cosmetic Formulas.
Part 6—Household Formulas, Flavors, Extracts, Polishes, etc.
Part 7—Veterinary Formulas.
Part 8—Technical Formulas.
Part 9—Photographic Formulas.
Part 10—Beverage and Soda Fountain Supplies.
Part 11—Miscellaneous.

It will be mostly a pharmaceutical book and by all means practical. The Committee selected all formulas which it thought would be of great help to the pharmacists. Now let us consider its commercial value.—The numbers following titles indicate the number of items.

PHARMACEUTICAL FORMULAS (PART I)—777.

Often a pharmacist is given prescriptions calling for formulas of the British, German, Hungarian, French, Swedish, Italian, etc., pharmacopœias. Not every pharmacist is in possession of all these books, consequently he may refuse a prescription on account of not having the proper reference books. In the Recipe Book, however, he will find a good many formulas of the above-mentioned pharmacopœias in common practice. He also may come across a prescription calling for preparations from the old edition U. S. P. and N. F. Most of the pharmacists discard these books, therefore this Recipe Book will come in very handy as some of the most important formulas which are frequently prescribed will be

* Read before Section on Practical Pharmacy and Dispensing, A. PH. A., Philadelphia meeting, 1926.

[1] Now in preparation.

found there. Also in the Formula Book will appear the deletions of all galenicals from both the U. S. P. and N. F. How many times do I have calls for the ingredients of Rhubarb and Soda of 1880? In this book such formulas will be found.

The pharmaceutical formulas which will appear in the book are for ampuls, balms, lotions, liniments, mixtures, solutions, etc. All these will be a great help to the pharmacist in the conduct of his prescription department. Consequently this book will be of great commercial value to him, inasmuch as he will not have to refuse any prescriptions and therefore this will greatly increase his income.

It's needless for me to add that there are some men who will not take any interest in this book for the reason that they think the two Official Standards and the Dispensatory are amply sufficient to conduct their prescription departments. This also applies to another type of pharmacist who may buy the U. S. P. and N. F., but never use them because they can buy the official preparations cheaper than they can make them themselves. Not long ago a certain proprietor of a drug store died and when I was called upon by the widow to examine his stock in order to dispose of the store, I was astonished to find the U. S. P. IX and the N. F. III untouched in the original package the way they were forwarded to him by mail. In other words, he had had the books for about ten years without ever glancing at them. He did not violate the law. According to our New York State Law the pharmacist must swear that he has in his possession the two Official Standards. He did have the books and hence did not perjure himself. The R. B. does not apply to the pharmacist of that type. It is of no value to him either way, that is from a commercial or even scientific viewpoint.

In the *New York Times* of August 22, 1926, a full-page article appeared under the title of "Bootleg Drug Stores Checked by Dry Drive." I am not going into the details of this article as we all are acquainted with conditions as they exist, not only in New York State but all over the country. However, I shall quote one paragraph, as follows:

> "For a long time prohibition agents as well as laymen knew that a bootleg trade among druggists was going on, that the real drug trade was being neglected for the more lucrative liquor trade, and that pharmacy as a profession was becoming very popular. Many druggists who barely made a living before prohibition, became exceedingly prosperous, and stories were told of men financing young pharmacy graduates on a partnership basis because of the money that could be made on bootleg liquor."

This remark in the paper in regard to the financing of young pharmacy graduates on a partnership basis, because of the money to be made in bootleg liquor, is, in my opinion, a disgrace to the whole profession of pharmacy. We must find something more attractive for the young men who are graduate pharmacists than the liquor trade—a reason for the existence of some drug stores. There should be better opportunities for legitimate pharmacists to practice their profession. The condition of pharmacy to-day in competition with the cut-rate stores and the perfumery shops is certainly no attraction for the young man to branch out in business. The young man who is going to start in business and conduct a real pharmacy, and thus build up a good name and reputation, will always make a success. It will simply be a case of the survival of the fittest. Therefore, the possession of all textbooks will be of benefit to this type of man. Make your own

preparations; do not buy them even if they do cost but a few cents more. Be ready to supply the physicians' demands. Do your own propaganda work among them and good results will be achieved. That's as far as the pharmaceutical formulas are concerned.

HOSPITAL FORMULAS (PART II)—375.

Occasionally pharmacists encounter prescriptions calling for certain hospital formulas. They are placed in a very difficult position because they cannot possibly be in possession of all the hospital formula books. (Each hospital has a so-called pharmacopœia of its own.) In trying to communicate with the hospital, the pharmacist either refers to the chief physician or the superintendent, who is sometimes unaccommodating and not always desirous of giving any helpful information.

The value of this Recipe Book is to supply the pharmacist with formulas from different hospitals which will be alphabetically arranged. This will avoid unnecessary trouble and of course it will be a great service to the pharmacist as well as to the patient. For example, A B C mixture which contains potassium acetate, potassium bitartrate and potassium citrate is different in strength and ingredients from other formulas of A B C mixture of a different hospital. Someone may ask of what value are New York Hospital formulas to a pharmacist from California or Pennsylvania. In this book we have not only formulas from hospitals in New York State, but also prominent hospitals in other States.

DENTAL FORMULAS (PART III)—34.

How much profit do pharmacists derive from different dental preparations which are in the market to-day that are advertised and sold in the cut-rate stores and department stores? By making up dental preparations they will certainly derive more profit. Besides customers will be brought to the store because they will not be able to obtain the same dentifrice everywhere. The value of this Recipe Book from a commercial standpoint is that it contains quite a number of dental formulas from which the pharmacist can select the one which will fit his needs the best. Some skeptical pharmacists may, however, claim that they can buy a tooth paste or tooth powder or dentifrices from some manufacturer under their names and which will bring the same revenue. This may be true but it makes a difference whether the label reads "prepared for" or "prepared by." There is always time to be found by the employees to put up such preparations as well as by the officials of the U. S. P. and N. F.

Another point to be taken into consideration is that the pharmacist can give these dental formulas to the neighboring dentists and ask them to prescribe and recommend them to their patients. Dentists will do this in preference to advising the use of some of which they do not know the composition.

In a recent statement a manager of a department store is quoted as saying: "A certain proprietary costs 57 cents and sells for 54 cents. Our own preparation costs us 32 cents and sells for the same price." There is a gross loss of three cents on every bottle on the proprietary which is largely augmented when the selling and overhead costs are reckoned with.

LABORATORY REAGENTS (PART IV)—66.

It is true that very few pharmacists are doing laboratory work. They may say that it is of no use to them to have different formulas of laboratory reagents and consequently they are not at all interested in them. But the pharmacist frequently has calls for these reagents by the physician and very often by patients. Fehling's Solution, Purdy's Solution, Benedict's Solution are sold quite frequently in many pharmacies. If a certain reagent is called for by a physician to be prepared for his laboratory use, how convenient it would be for the pharmacist to consult the Recipe Book and find the desired formula. This will raise the standard of the pharmacist in the eyes of the physician and again will bring him additional revenue. Besides, it will make a regular customer of the physician, not only for his laboratory reagents but for his biologicals and other physicians' supplies.

FORMULAS FOR COSMETICS (PART V)—184.

Cosmetic formulas are of great value to the pharmacist. These preparations are sold in every drug store and pharmacy. They are also sold in the cut-rate stores, department stores and in the so-called perfumery shops. The latter are spreading over the United States; they try to imitate the drug store and are great competitors and a menace to the pharmacist. The value of this Recipe Book is that it gives quite a number of cosmetic formulas which pharmacists can put up under their own names. These cannot be obtained everywhere and certainly not at the perfumery shops.

In 1892, I was employed in a pharmacy where I worked with a gentleman well known to-day who always put up cold creams, face powders, etc. He prepared these according to the formulas published in the pharmaceutical journals. To-day his cosmetic preparations are known all over the United States and his establishment is considered one of the largest of that type.

HOUSEHOLD FORMULAS, FLAVORS, ETC. (PART VI)—45.

Frequently the pharmacist has a call for a certain household remedy, flavor or extract. From the experience of an old-time pharmacist, this demand often comes in the daily routine of business. In order to meet this demand the pharmacist must be in possession of a book similar to the R. B. By consulting this book he will find the necessary formula, will receive additional revenue and will secure the reputation in the neighborhood of being able to supply all the needs of his customers along these lines.

VETERINARY FORMULAS (PART VII)—28.

While the use of veterinary formulas may not apply to the pharmacist of a large city, certainly in the small town where the drug store is located near the farms, or even in the large cities where there is a call for veterinary formulas, this book will come in very handy. When a person has a pet animal that has become ill and the pharmacist can come to the rescue in an emergency case, he will secure an invaluable friend and customer. This means additional profits.

TECHNICAL AND PHOTOGRAPHIC FORMULAS (PARTS VIII AND IX)—114.

I mention in connection with these formulas for developing, etc., Mr. Becker of Chicago to whom a great deal of credit should be given for supplying them.

It is needless to say that a great many pharmacists are interested in this work. They are doing some developing and a number of formulas presented by Mr. Becker will be of great value to such pharmacists.

BEVERAGE AND SODA FOUNTAIN SUPPLIES (PART X).

The public has been trained to buy its refreshments and beverages at the soda fountain of a drug store in preference to a candy store. To my sorrow, many pharmacists, it seems to me, have turned over their old noble pharmacies to a candy, soda water and luncheonette counter which of course brings in considerable revenue. In order to get the patronage of the public, the pharmacists' syrups and extracts must be of the best, as customers are very discriminating and go where they will get the most wholesome and refreshing drink. Of course, besides cleanliness and proper service at the fountain, the drink itself is what brings the customer back. Therefore, the value of this Recipe Book or A. PH. A. Formula Book is to supply the pharmacist with formulas for syrups and drinks.

MISCELLANEOUS (PART XI).

Under this head there will be found a number of formulas which will be of value to every pharmacist.

THE PRESENT STATUS OF THE VARIOUS SYSTEMS OF WEIGHT IN ENGLISH PHARMACY.*

BY WILLIAM J. HUSA.**

The statement has been made[1] that the avoirdupois or Imperial weight is used in England in prescription compounding. In the interest of accuracy in my own teaching, I have secured further information on this point from several sources, all of which indicates that the statement as it stands is incorrect. As this information may be of some interest to others in the field of pharmaceutical education, I am presenting it at this time, together with some remarks on the present status of the metric system in English pharmacy.

It is not to be denied that there has been some confusion in Great Britain on the question of what weights to use in dispensing prescriptions (1). There is evidence of this uncertainty in the preface of the 1914 British Pharmacopœia (2) which contains the statement that in prescriptions, the symbol ℥j is used sometimes to represent 480 grains, sometimes 437.5 grains, and also to represent 1 fluidounce. The real meaning of this symbol was thrashed out in the English courts in 1924 (1,3). A South London public analyst gave it as his opinion that the symbol ℥ j in a prescription meant 437.5 grains and that ℥iv meant half of that. Charges of inaccuracy in dispensing were brought against five pharmacists, based on this supposition of the analyst. The Retail Pharmacists' Union and the Chemists' Defence Association went to much trouble and expense to prove that the apothecaries' ounce of 480 grains is the one by which dispensing is done. Sir

* Presented before the Section on Education and Legislation, A. PH. A., Philadelphia meeting, 1926.

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[1] See Sturmer, "Pharmaceutical and Chemical Arithmetic," 3rd edition, pp. 32 and 34; 4th edition, pp. 32 and 34.

Nestor Tirard, Senior Editor of the 1914 British Pharmacopœia was one of the witnesses who testified that twice ℥iv was 480 grains. After hearing the evidence the prosecution dismissed the cases in which an excess of ingredient had been claimed. Johnston (1) states that this decision is in accordance with the custom of the trade and that it is confirmed by all the authoritative English textbooks as well as by teachers of pharmacy. In this connection it may be noted that the British Pharmaceutical Codex (4) lists the apothecaries' scruple, drachm and ounce together with the avoirdupois weights in a table under the heading of Imperial weight.

Johnston (1) explains the reason for the analyst's misconception in the following words: "It will be remembered the 1864 B.P. was to supersede, by law, the London, Edinburgh and Dublin Pharmacopœias—which, until then, had been the authorities in England, Scotland and Ireland respectively. In the London and Edinburgh Pharmacopœias, the formulas were all given in apothecaries' weight right up to their end, and that also applied to the Irish book previous to 1850. In that year, the Irish compilers, departing from ancient custom, discarded apothecaries' and set up avoirdupois weight as their standard. . . . .They took liberties with the old divisions of avoirdupois and divided each ounce of 437.5 grains into 8 drachms, and each of these drachms into three scruples . . . . .that was the position the G. M. C. (General Medical Council) of Great Britain had to face in 1864. They faced it by adopting avoidupois also—through frankly admitting that it had grave defects. They could not legally go as far as the Dublin compilers and order its adoption in prescriptions, nor did they divide the ounce, but they recommended medical men to avoid the use of the words ounce and pound except in reference to avoirdupois. Up to, and including the 1898 edition, they further declared that it was still optional with the physician in prescribing to use the symbols ℈ (scruple) and ʒ (drachm)—20 and 60 grains respectively. In England and Scotland, at any rate, prescribers and dispensers kept on using the apoth. signs ℥ and ʒ meaning 480 and 60 grains." Johnston's observations indicate that the apothecaries' weight is now used in Ireland, and that the Irish difficulty of 1864 no longer exists, or exists to a negligible extent.

In order to get still another check on the accuracy of my conclusions I wrote for information to the editor of *The Pharmaceutical Journal and Pharmacist* in London. The reply contained the statement that avoirdupois weights are not used by chemists and druggists in Great Britain except for the sale of drugs at retail. From the information I have gathered on this point, it seems fair to conclude that Professor Sturmer is in error in his statement (5) that the avoirdupois system is used in prescription compounding in England.

Although the 1914 British Pharmacopœia favored the general adoption of the metric system by British prescribers, metric enthusiasts will find little comfort in the progress which has been made thus far by our English friends. According to the editor (6) of the *Pharmaceutical Journal and Pharmacist*, the almost universal practice among prescribers is to order drugs and medicines by apothecaries' weights—an odd one uses the metric system which was made optional by the British Pharmacopœia of 1914—but this has had no appreciable effect in leading to the general adoption of that system, for prescribing, compounding and dispensing purposes.

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(6) Private communication to author.

GAINESVILLE, FLORIDA.

PREPARATION OF AMPULS.*

BY S. L. HILTON.

The object I have in view in discussing this subject is to bring out the main points in connection with the preparation of ampuls. Not that I expect every pharmacist to make them, but I believe every pharmacist should know something very definite about what is required to manufacture ampuls, so that he can talk intelligently about them to physicians and explain what they are, what is necessary to properly prepare them, and at the same time caution them relative to certain things that are liable to occur in ampul medication.

When we handle ampuls, whether in a large or in a small quantity, there are many things that must be taken into consideration. I started in this work because of constant demands from physicians to prepare solutions of all kinds in sterile containers, so that they could have them quickly and be assured that the medications they administered to their patients were sterile and exactly what they wanted.

Ampul medication is more popular than ever before; and one reason is this—there is produced thereby a psychological effect on the patients which they do not receive with the ordinary form of drug administration—they see the physicians take out a little bottle of some kind; that he nicks it, opens it and injects the contents by means of an hypodermic syringe.

Furthermore it is often the case when medicine is administered by mouth, that at once or a little later on it is found that the stomach is in no condition to retain the medicament, and the patient, instead of getting relief, suffers and does not care to continue what has been prescribed. Also ampul medication has become more popular because the patient goes to the physician, the medicine is administered hypodermically, subcutaneously, or intravenously, and the patient goes about his business. He has very little, if any, after-effect, possibly a little pain which passes off quickly, and he requires a dose of medicine only twice or possibly three times a week. This fact has increased the popularity of ampul medication.

QUALITY OF GLASS IMPORTANT.

Ampuls should be tested because they must be of neutral glass. Jena glass, before the war, was neutral glass and very good, but I find that the glass which

* From an address before the Section on Practical Pharmacy and Dispensing, A. PH. A., Philadelphia meeting, 1926.

we get from the other side at the present time, supposed to be the same, is different. It is more brittle, more easily broken, it is difficult to seal, and a great deal harder to handle in many other ways. I have been able to locate a firm in this country that does make a glass similar to Jena glass, which seems to stand the tests well and is suitable for practically every solution but one, and that I shall bring to your attention shortly.

The usual method followed in testing ampuls to determine whether or not they are of neutral glass is to fill them with a weak solution of phenolpthalein, seal, put them in a vessel of water and boil for about fifteen minutes. If the ampul is not of neutral glass a reddish color will develop. Probably a better method is to take a number of ampuls, grind them in a mortar and treat them with $N/10$ sulphuric acid and then titrate back to the neutral point with $N/10$ alkali, to determine the alkalinity. For all ordinary purposes the first method is satisfactory and all that is necessary.

There are a few ampuls made of ordinary glass that are not satisfactory for use. The color usually develops in these ampuls within a few minutes. I have here some of the American-made ampuls of non-soluble glass, that have been boiled for two hours, and you cannot see any signs of alkalinity. They are put up by a firm in this country and I am using them at the present time. We, of course, have various sizes of ampuls running from 1-cc. up to 50-cc. capacity.

We also use vaccine vials. Some physicians desire the solutions put up this way; we obtain the vials made of non-soluble glass from the same firm. These vials are kept closed with a rubber cap stopper dipped into a solution of cresol, the top wrapped in cotton, and a glass cap filled with cotton covers the vial.

When the physician is ready to use these vials he removes the cap and cotton, washes the stopper with cresol solution or alcohol to insure sterility, then he punctures the stopper with a sterile hypodermic needle and withdraws the desired dose through the opening in the center and administers it.

STERILIZATION.

As a guide and, probably, for more information with reference to what is required for sterilization, I know of no better authority than the chapter on "Sterilization" of the new edition of the "National Formulary." This chapter has been written and reviewed by a number of pharmacists of large experience in their own laboratories, and the Committee has also had the advantage and coöperation of numerous outside workers.

I have found it is absolutely necessary to obtain glassware in a sterile condition and perfectly dry to use the hot air sterilizer and bringing the temperature up to at least 160° C., sometimes 180° C. I frequently use this temperature on large-sized syringes and glass-stoppered ware, first withdrawing the piston or glass stopper to avoid breakage. At certain times of the year the atmosphere is contaminated by the bacillus of timothy. This bacillus is probably the most troublesome we have to contend with; it requires a temperature of at least 160° C. to destroy it. For all glassware and all containers, the hot air sterilizer should be used, but for solutions you cannot use such temperatures, for the reason that you will decompose them and then the solution will be worthless. Like care must be exercised in sterilizing solutions as in sterilizing glassware.

In my experience the only satisfactory glassware that I have had success with for containers, other than the ampuls, is Pyrex ware. While Pyrex ware will give a positive test for boric acid, in small quantities, such a small amount, even if it does enter into the solution, has no deleterious effect whatever. Consequently, you will be sure you are giving the physician a solution that will prove satisfactory.

It is necessary to determine what temperature to use. If you are using the autoclave and the temperature is raised to above 100° C., in the majority of cases you will partially decompose the solution; if it should happen to be a cacodylate, the odor of garlic will be immediately recognized, showing that the organic arsenic compound has been broken up and the arsenic liberated. This is likewise true of all organic mercury salts if you raise the temperature above 100° C., mercury being precipitated as a black oxide.

MERCURY SALTS.

We are called upon constantly to put up suspensions of mercury salts in various forms. We use glass-stoppered bottles and sterilize in the Arnold sterilizer for one hour, with satisfactory results. If, however, you are tempted to use the autoclave with steam under pressure, the temperature is raised above 100° C., and decomposition takes place, and a heavy gray deposit will occur, showing that the mercury salt has been broken up, as I previously mentioned.

All glassware is sterilized, as pointed out, at a temperature of 160° to 180° C., for one hour in the hot air sterilizer. Solutions are sterilized in the Arnold sterilizer for one hour. In cases where we can use the autoclave, 15 pounds' pressure for twenty minutes suffices; the work is accomplished much more quickly.

AMPULS OF DISTILLED WATER.

I put up a great many ampuls of various sizes of distilled water. Here we use the autoclave. If the larger ampuls are sealed before placing them in the sterilizer the loss by breakage is very heavy, reaching sometimes 85 per cent. To overcome this I place the ampuls in wire gauze baskets made for the purpose, and each ampul is covered with a cap made of parchment paper that fits over the stem of the ampul and is held in place with a rubber band. These caps are covered with gauze so that they will not come off, and autoclaved at 15 pounds' pressure for twenty minutes. When they are cold they are sealed by using a Meeker burner which gives a very high temperature. The cap is removed, and the flame of the burner is at once applied until the ampul is sealed, thereby avoiding any contamination. By this method, the loss is reduced to practically nil. The ampuls I spoke of a few minutes ago that must be watched more carefully than any others are ampuls of distilled water. This may seem peculiar, but we have more trouble with them than any other ampuls. Inquiries have elicited the same condition with large manufacturers. What is the cause I do not know. I have turned over to the Research Committee a number of specimens, in an attempt to solve the problem, and I have several here that I want to show you.

After the water has been in the ampul, sometimes for a day only or for weeks, a condition develops which shows fine needle-shaped crystals of pure silicon. Ampuls out of the same lot will often stand for weeks without this condition

developing. Consequently, it is necessary to examine ampuls of distilled water very closely before sending them out. Here is a specimen and there are two others in which the silicon from the glass has been thrown out. Examine them and notice the needle-shaped crystals.

There are some other substances we are called upon to put in ampuls with which we cannot follow the usual methods of sterilization or pasteurization. One in particular is a 1-per cent solution of tartar emetic. You have a condition confronting you here that requires certain technique and the greatest care. If you attempt to heat the solution, a basic salt will form which will not redissolve and will appear in fine needle-shaped crystals. It, therefore, becomes necessary to resort to the Berkefeld filter and vacuum filtration. Before using the filter it must be taken apart to separate rubber washers prior to sterilizing the filter. The rubber washers are sterilized in the Arnold sterilizer, while the filter candle is sterilized in the hot air sterilizer.

In using the Berkefeld filter for the smaller size, after it has been set up, the filter candle is covered with a small beaker, and the larger size with a large test-tube, to prevent the drawing in of air until the solution has reached the bottom of the container. In handling the Berkefeld filter it is necessary to make up more of the solution than is required for the number of ampuls to be filled because you have not only a loss by reason of the filter candle holding some but also the container; as the cost of the solution is only a trifle, this amounts to little.

The simplest method for vacuum filtration is with a Bunsen pump, using two filtering flasks. The Bunsen pump is attached to an ordinary water spigot and connected with the second flask, which is then connected to the first flask to which the Berkefeld filter has been properly connected. The purpose of the second flask is for a safety flask to prevent any of the solution from becoming contaminated if somewhere in the same building the water may be turned on, which would, by reason of the vacuum, suck some of the tap water into the first flask.

The Berkefeld filter is also used in preparing sterile glucose solutions for intravenous use. I make a 50-per cent solution of glucose and put these up in 50-cc. ampuls which are now largely used in several of our local hospitals in connection with the administration of Insulin. In these ampuls we have never had any precipitate and they can be used by adding the contents of the ampul to enough sterile water, which the hospitals always have on hand, to make 500 cc. of a 10-per cent solution which they desire. I have really been surprised at the number of times I have received rush calls for these ampuls. The hospitals will not keep them on hand, and that, I find, is the trouble with the majority of hospitals in Washington. Their supplies are miserably low to meet emergencies, and the drug stock very short, yet they constantly need them. Is it not a wonder they do not learn by experience?

In making a glucose ampul we use the very highest of anhydrous glucose obtainable—it is put up by a company in Detroit, and costs over $3 per pound; I can rely upon this product to obtain a solution absolutely pure and almost colorless. The same glucose ampul can be made by sterilizing in the autoclave. Here you will find there is a difficulty. When you prepare the solution and it is filtered, and this takes considerable time to filter through paper, and you auto-

clave it, you will find when you remove it from the autoclave the solution has not only darkened, but there is considerable of a precipitate which will again require another filtration through paper, and be again autoclaved to obtain a solution free from foreign particles and one that is suitable for intravenous use.

That was my trouble when I first started to prepare this ampul. I worked out the process just spoken of, using the autoclave, and the following week after getting good results, the *Journal of the American Medical Association* contained an article along the same line by two physicians who had the same trouble and solved it in the same manner. This then led me to the Berkefeld filter which is much more rapid, far easier to handle, and gives me a better solution and one that is thoroughly sterile.

FILLING AMPULS.

There are many methods for filling ampuls. I believe, on a large scale, a number of manufacturing plants use the vacuum method with which they fill a large number of ampuls at one time. That may be all right, but it has its disadvantages. I have tried it and have abandoned it. Ampuls put up by this method are held in a certain position, the stems are dipped into the solution, a vacuum is created and the solution drawn up into the ampul. Not only will some of the solution remain in the stem of the ampul but the outside of the stem has become wet with the solution, so that when you seal it you carbonize what remains on the stem; if you will notice, a lot of ampuls have black spots on the stem which are due to this method of filling.

The plan I find best and the one I now use and have tried hundreds of times is by use of the separatory funnel. These, of course, are of various sizes according to the amount of solution required. Burettes can be used, but they are too small, too clumsy and more apt to be broken. For this reason, the separatory funnel is best. For small amounts of solutions you can use a 250-cc. funnel, for larger quantities 1000-cc. funnel. Your funnel is stoppered with a plug of cotton wrapped in a double thickness of gauze and then flamed, to burn off loose particles of cotton so that they will not fall into the solution. This same method of using cotton and gauze, and flaming must be followed in plugging flasks or any other container; otherwise, in intravenous injections these particles will be carried by the blood stream to the heart and are apt to get caught in the valves of the heart, thereby producing embolism.

I examine all solutions with a magnifying glass and numerous samples of the ampuls, after filling, for foreign particles before boxing, and if they contain any they must be rejected. The plug of cotton in the gauze of the separatory funnel acts as an air filter excluding bacteria when filling the ampul. In filling, a short piece of sterile rubber tubing is attached to the separatory funnel and a hypodermic needle made of platinum for the small ampuls, and for the larger ampuls a glass filler is easily provided by heating and drawing out the glass so that the opening is larger than that obtained with a needle, and the flow of the liquid much faster.

The reason for using a platinum needle is that many solutions will act on the ordinary steel needle, as, for instance, a solution of mercury iodide with sodium iodide. This is evidenced at once by the solution getting dark; you will have to use either the platinum needle or a glass filter.

All solutions for ampuls must be as near the neutral point to litmus as can be contained without decomposing the solution. If they are perceptibly alkaline the patient suffers pain; if they are acid to any extent the patient likewise suffers pain. A solution of iron arsenite, iron citrate and several others are always very, very acid and will cause considerable pain. If, however, you will bring the solutions as close to the neutral point as possible, the patient can take them and will not have any pain or but very little, which will not last long.

IRON ARSENITE REQUIRES CAREFUL MANIPULATION.

Ampuls of iron arsenite require careful manipulation. A Washington physician had tried every ampul obtainable of iron arsenite, for use in treating a lady of prominence who was very cranky and one who must have what she wanted. He came to me for help. After numerous attempts, I succeeded in furnishing this ampul which proved not only satisfactory, but brought me many more customers for the same ampul and made me new customers for other business.

In filling and sealing ampuls two dispensers work together. With a little practice you can hold five of the ordinary-sized ampuls in your hand, and fill them very quickly. They are placed in holders with a capacity for ten ampuls, one dispenser works on one side of a glass-top hospital table, filling, and another on the other side, who seals the ampuls as fast as the holder is filled. Here I also use a Meeker burner because a high temperature can be obtained—1700° C.—thereby sealing rapidly. In sealing you must keep your eye on the ampul every second of the time you have the flame on the stem of the ampul, because if you do not you will blow a bulb on the point of the ampul, which will break if the flame is not removed as soon as the bulb begins to form. By following this method, you know the ampul is sealed, for the reason that the air inside of the ampul due to the heat used causes the expansion of the glass which, if not sealed, would escape and would not cause the formation of a bubble. We then wash and dry the ampuls and examine the point of each carefully for breakage. We are then ready for boxing. I find if we sterilize our solutions by the method I have spoken of, and our apparatus by the same method, it is not necessary to sterilize the ampuls after they are sealed.

I do not know how many ampuls I have put up, but I have never had a complaint and never a case of infection. Then why go to the extra trouble of sterilizing the ampuls after sealing? It all depends entirely on how well you look after the sterilization, the filtration and the handling of the ampuls. You might compare the process to an ordinary chain—the chain is no stronger than its weakest link—the value of the sterilization is in comparison to its weakest point. If you fall down on one point, the whole thing falls down just like a pile of bricks set on end; if one at the end falls, they all fall.

Of course, in doing this work I have a room set aside for that purpose, clean and free from currents of air. Sometimes, on a very hot day, it is rather uncomfortable to be closed up without fresh air, but you have your duty to perform and the best way to do it is with a smile; get down to it and do it as quickly as you can. Then go to the show.

SODIUM SALICYLATE.

Another ampul that is difficult to prepare is that of sodium salicylate. I have made sodium salicylate to get what I wanted and failed; I obtained the highest grade of pure salicylic acid from the Baker Chemical Company, washed all vessels with nitro-hydrochloric acid, then with tepid water and then with distilled water and double distilled water, and yet the finished sodium salicylate when dissolved in distilled water would show a brownish color, eventually turning black because the product contained traces of phenols. There is obtainable a brand of sodium salicylate that is absolutely pure, free from phenols and pharmacologically tested, and this is the only kind suitable for preparing ampuls of sodium salicylate.

Dr. H. A. B. Dunning, I think, was the first one to show me how to clean ampuls. Those we received at that time were in bad shape and had to be cleaned. The firm that furnished me ampuls now sends them clean-wrapped, free from foreign particles of glass or other foreign substance—carefully wrapped in tissue paper; but we examine them carefully and if not perfectly clean they must be washed. In washing, I use a separate arrangement that fits over an ordinary spigot to which a rubber tube and a hypodermic needle is attached. This flushes the ampul out thoroughly. To remove the water remaining in the ampul it is necessary to use another needle to which an ordinary atomizer bulb is attached, so that you can blow out the water.

The larger ampuls are more easily cleaned because the opening is larger and you can readily shake out the water. The average junior clerk can, in a short while, wash and clean many hundred.

I think I have mentioned about all that is necessary for a proper understanding of the methods used for making, filling and handling ampuls. I only want to mention one more thing.

ADEQUATE CHARGE MUST BE MADE.

The average pharmacist when he is called on for things out of the ordinary —such as work of this kind—thinks it is a lot of trouble; it takes much time and means a lot of unprofitable work, but with the training that we must have, all that is necessary is to have some simple apparatus and have everything in shape for quick use. The laborer is paid for his labor, why not the pharmacist? I charge accordingly. My time is worth several dollars an hour. For sterilization of anything, no matter how small, my charge is one dollar. Add to this the cost of materials, plus a fair and reasonable profit, make your selling price accordingly, and you can obtain a handsome profit with the expenditure of but little time, and have much interesting work to perform.

To illustrate, on an occasion recently, when two of my clerks were off for the afternoon and I had an order for a thousand ampuls for a physician that had to be delivered the following morning, I left my place of business at the usual time, drove six and a half miles to my home for dinner, and after dinner I said to Mrs. Hilton, "I am going to work to-night. You are a pretty good sport, I want you to accompany me and help me." I told her what I wanted, and within two and three-quarter hours after we reached my laboratory, we had filled and sealed 1178 ampuls.

THE TELEPHONE SITUATION IN CHICAGO.*[1]

BY WILHELM BODEMANN.

In 1896 the telephone situation in Chicago was briefly this: We paid $225 per annum for a business telephone—grounded, of course, and not any too good at that. The general public had not placed private phones in their homes and did their telephoning in the drug stores and to such an extent that I had hard work getting the store phone for my personal use, much less could my patrons get me on the telephone to send in orders.

Not being long on patience I went to the then general manager of the telephone company, A. S. Hibbard, and General Superintendent Zeublin for relief, especially since a medical friend, who as a rule was not in the habit of indulging in profanity, came in one day and was furious because he could not telephone for some drugs he needed in a confinement case. He waited and waited and finally jumped into his buggy and came down, raised Cain in seven different languages, saying: "Why didn't you throw out that old goose who monopolized your phone for forty-five minutes talking to Nelly about her new dress and hat?"

Well, Mr. Hibbard checked up my phone and found that it was used on an average of 175 times for outgoing connections. I asked the telephone officials if they could not put in a device so that the public would have to pay for each connection. Messrs. Hibbard and Zeublin reluctantly consented to do so, provided we would have the nerve to do so.

I went to President Tom Wooten and the C. R. D. A. executive committee and this committee approved my proposition and submitted it to a mass meeting. After I had talked for about an hour the mass meeting seemed to be in favor of my proposition. When George Pierre Danton Engelhard let loose a firebrand, oratorical cyclone, the air was blue with such words as "monopoly," "octopus," "despotism," "egotism," "tyranny," etc., and the C. R. D. A. turned down the plan.

Loyalty to the association would have ended the scheme, but I was loyal to the cause. I, of course, was sorry, but all the more determined. My Hyde Park druggist friends were with me and we put in the first public pay telephone.

In spite of the fact that the telephone officials adopted my plan *reluctantly*, the fiery opponents of our scheme charged Mr. Wooten and myself with being bribed.

When the Chicago druggists saw that we in Hyde Park received not only relief, but turned expense into revenue, cut out the "free lunch" "dead heads" to such an extent that the number of outgoing calls in my store was reduced from 175 to 20 a day, making it possible for my patrons to place orders by phone, the rest of the druggists tumbled over themselves to get into the band wagon and the former opponents became enthusiastic supporters of the *new way*.

In 1898 when the N. A. R. D. was born, I moved that the N. A. R. D. should carry the propaganda to the country and a committee for this purpose was appointed and in 1900 made a standing committee, of which I have been chairman ever since, and with the efficient coöperation of that able secretary, Samuel C. Henry, there are no cities and few towns of any size hanging on to the old way—

* Read before Section on Historical Pharmacy, A. PH. A., Philadelphia meeting, 1926.

[1] With this contribution a reprint of an article on the subject in 1911 was presented.

the "dead beat" way, paying for the service for the public, who might as well expect us to pay their gas, milk and meat bills.

I emphasize the work of Mr. Henry, a diplomatic, tactful official of the N. A. R. D. and am frank to admit that as a diplomat I am a fizzle. I rather prefer a fight in the open than a smooth process of persuasion, but it seems that the blend of these two proceedings worked well. The druggists now do not have to pay a flat rate, in most cases have to guarantee a certain amount and on all receipts over that sum receive a commission.

THE CHICAGO VETERAN DRUGGISTS' ASSOCIATION.*

BY WILHELM BODEMANN.

The Section on Historical Pharmacy of the AMERICAN PHARMACEUTICAL ASSOCIATION should not only record history, but should make history, and this is my notion of doing it.

The commercial interests of the drug trade are being taken care of very efficiently by the great N. A. R. D. The intellectual interests are in charge of the pharmaceutical colleges and handled so forcefully that the "standard" has been raised so high that it takes a strong telescope to see the tail end of the dear thing.

In 1898 Chicago launched a veteran druggists' association, taking care of the sentimental interest of the craft, and that's where your Section should come in to *make* history. Blast the bugle call to all *city* and *state* associations who have not already started veteran associations to do so at once.

We found in Chicago when T. N. Jamieson conceived the organization of the C. V. D. A. that the druggists who had been in business for over twenty-five years would have become estranged had they not met regularly for the purpose of keeping the home fires burning. They would, perhaps, meet occasionally on the street, ask "How do you do" and hardly have time to tell each other "how they *did*." Since we have our regular weekly Round Table of the C. V. D. A. we are so interested in each other that we have an average of 80 per cent of our membership at each meeting. We decorate the members and celebrate the anniversaries of their births during the week on which they occur, taboo discussion of religious, political and business topics and gather old records for the future historian of pharmacy by filing our biographies and photos. We attend funerals of our members in a body and drop a carnation—just one—as a last tribute to our deceased member. The carnation was made our emblem by our gracious patroness, Mrs. Jamieson, when she decorated us at our first meeting.

No discord has ever marred the symphony of our lovefeasts and our platform has proved such an iron wall against disharmony that we went through the terrible World War without a break in our platform, although our members being made up largely of American citizens of foreign descent had friends on both sides of that deplorable holocaust.

Therefore, my brethren, be ye steadfast and immovable and abound in the work for love, friendship and humanity by going to it in the cause of veteran druggists' associations.

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* Presented to Section on Historical Pharmacy, A. PH. A., Philadelphia meeting, 1926.

DEPARTMENT OF BUSINESS MANAGEMENT

Conducted by Paul C. Olsen.*

THE PSYCHOLOGY OF EFFECTIVE DISPLAY.

Many people are frightened by the word psychology. It smacks of the classroom and sounds forbidding. Psychology is simply a study of the behavior of human beings—why we act the way we do and the mental processes which cause or result from, these actions.

A person who wants to sell anything has an immediate and serious interest in psychology—the mental processes and behavior of human beings—because in order to sell successfully mental processes and behavior must be so stimulated as to produce the desired action—the purchase of whatever it is he is trying to sell.

It is easy enough to explain in a general way what psychology is. Likewise, the connection between psychology and successful selling is apparent with very little thought. Anyone who has ever tried to sell anything—be it a folding camera in a drug store, or a new line of biologicals in some physician's office—will testify, however, that there is an enormous gap between understanding in a general way what the sales process aims to do in the way of influencing human behavior and the actual accomplishment of the desired reaction with the prospective buyer. There is a big difference between knowing what you want to do and doing it successfully.

One of the principal reasons for this big gap between knowing what selling aims to do and actually accomplishing these aims is the complexity of human nature. Selling is complex because human nature, with which selling of necessity must deal, is itself complex. Psychology is a study of human nature, behavior and mental processes. Therefore, the more a person knows about psychology the better equipped he is to sell successfully.

Anyone who remembers his difficulties in learning to operate an automobile will recall how utterly complex and difficult the whole thing seemed. There was the steering, the spark control, the hand throttle and the foot throttle for gas, the two brakes, the clutch, the gear-shift, the gasoline supply, the water supply, the oil pump and gage, the starter, the battery, the generator, the lights, the tires, all of which had to be considered every time the car was started. And after the car was started there were, in addition, all the complexities of to-day's traffic with which to cope. After a few days' experience, however, automobile driving for most people becomes as simple and easy as walking. All the various things to be done become habitual and second nature.

I wish it could be said that the processes of successful selling are as easily mastered. In selling, however, a person is dealing with human beings whose actions and thoughts are subject to infinitely more variations and changes than the purely mechanical characteristics of a motor car. Psychology has undertaken to classify the actions and thoughts of human beings. This classification of necessity is complex because human nature is complex, but if a person can master

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well these psychological principles governing people's actions and thought they soon become so thoroughly ingrained that they too are habitual and second nature.

However, psychology, marvelous though its progress in recent years has been, has not yet developed to the point at which all of the principles controlling human thought and action can be pronounced with the certainty of instructions on how to drive a motor car. There are lots of things that aren't yet known. That is the reason that selling cannot be reduced to-day to an exact, mechanical process. We don't know all there is to know about human nature.

On the other hand, there are a number of facts about people's thoughts and behavior which are known definitely. Thus it is possible to make use of the available knowledge of human nature to make the selling process in that degree more certain and productive.

In all the preceding paragraphs I have talked only of selling, although the title of this series of articles is, "The Psychology of Effective Display." There is the first principle to recognize. The only justification for displays—either in the window or in the store—is that they help to sell merchandise. My purpose is to try to set down in a form that I hope will be usable a few of the tried and tested psychological principles which can be taken advantage of to make displays accomplish their purpose more surely and completely—that is to sell more goods.

It is only stating the obvious to say that if a display is to sell goods or to help to sell goods it must be seen. In order for it to be seen a display first must attract attention and then it must hold this attention long enough for the display to impress itself upon the mind of the person who sees it. Naturally, the hope is that this impression will be so strong and so favorable that the person looking at the display will have an irresistible impulse to buy then and there whatever it is the display is trying to sell.

Some displays will reach this maximum of effectiveness with at least a part of the people who see them. This does not mean, however, that a display which does not cause a single person to buy at the time it is seen is a complete failure. An extremely successful manufacturer of a cough syrup told me of an interesting experience of his which illustrates the point.

A druggist would put in a window display of this remedy. If during the week following the weather happened to be unusually dry and mild, few if any sales of the medicine would be made. As a result, the inference might be that this particular window display had little or no selling value. In fact, many druggists using this company's window displays did conclude that very thing and wasted no time in telling the company about it, often in very caustic terms.

If the week following the one in which the display had been in the window turned out to be cold and stormy an astonishing reversal took place. Sales of all cough remedies naturally increased, but the sales of the one displayed in the window the week before (which now was not displayed at all) were far greater than all of the others combined! The only possible conclusion could be that the casual glances of passers-by during the week of good weather had built up in their minds a familiarity with the name of this remedy. When they did need a cough remedy what was more natural than to ask for the one which already had been introduced to them by the window display?

Displays thus help to create both immediate and future sales. Although their most important and valuable purpose is to create sales immediately, never forget that they also have this secondary value.

Displays justify themselves, therefore, if they help to make sales, both at the time they are seen and later. A display can't do this, to be sure, unless it is seen and in order to be seen it must attract attention first and then hold this attention.

Therefore, the first thing to look into is the way by which a display can be made to attract people's attention. Entirely apart from the character of the merchandise displayed, there are some factors which help to attract attention to a display. These factors are called mechanical because in themselves they tend to attract people's attention, regardless of the kind of a display in which they may be incorporated.

The first of these purely mechanical factors which helps to get attention for a display is size. Anything which is much larger or much smaller than the usual thing attracts attention. A shoe store won unusual attention for a window because in it there was a real leather shoe fully as long as a man is tall. A Western department store blocked the sidewalks in front of a window by showing a man's straw hat with a brim a foot wide and everything else in proportion. Many druggists recall a successful display of tooth brushes, the central feature of which was a giant tooth brush, perfect in every detail but fully five feet long.

Objects much smaller than usual have the same attention-compelling force. The shoe store just mentioned drew attention to another of its windows by showing prominently a tiny pair of rubber boots not over three inches high. A prominent carpet sweeper manufacturer has delighted children's hearts as well as advertised himself by encouraging his dealers to display the toy size working model of his carpet sweeper.

Nature itself provides many animals with coats of a color which so harmonize with the landscape that these animals cannot be distinguished at a distance. Everyone knows that this serves as a protection to them; it keeps them from being seen by their enemies. A display is designed to do just the opposite—to be seen, to attract as much attention as possible. Therefore, anything which strikingly contrasts with its surroundings attracts attention by its very contrast.

Displays which employ the principle of contrast have the possibility of making themselves attract attention because they stand out with mountain peak prominence beside their surroundings. Some of the electric lamp manufacturers have advertised that a brilliantly lighted window display attracts more than its share of the passers-by because of its contrast with the surrounding streets and sidewalks and with the comparative dinginess of the usual window lighting effects. Dull black backgrounds by their very inobtrusiveness have the effect of increasing the attention which objects displayed in front of them receive.

Closely related to contrast as a mechanical factor in attracting attention to displays, and in many respects similar to it, is isolation. Many famous lighthouses which seem impressively tall when approached from the sea would look insignificant if set down beside even a six-story building. Part of the illusion of height is created of course by the contrast of the light house with its low-lying surroundings and part by the fact that it stands by itself. A druggist who wanted

to draw just as much attention as he possibly could to a skin lotion he had developed put one bottle of this skin lotion on a black-shrouded pedestal in his window. The entire background and sides of the window display space were also covered completely with the same rich, dull-black draperies. As an attention-getter the effect of the druggist's display was magical. Attention couldn't help but be drawn to the one object in the window—the enshrined bottle of skin lotion—and that of course was the one thing that the druggist wanted this display to do—to draw attention to his famous skin lotion. There was nothing else in the window to see; that one bottle had to receive all the attention which was attracted to the window.

People experienced in display will recognize, however, that the occasions are comparatively rare in which a merchant can afford to have all the drawing power of one window concentrated on a single bottle of one item. It is as if an entire show case were given over to a single box of candy. To be sure, the item, whatever it is, gets attention due to its isolation plus the contrast this affords with its surroundings. The question is, will the single item get enough extra attention by its isolation to repay the loss of display value for other items which cannot be displayed in order to give the single article its desired degree of extreme isolation? For instance, the skin lotion display I mentioned may sell two gross a day of this item, but how does this return and profit compare with the returns from the display of a more varied assortment of goods? The answer usually results in a compromise; the article to be featured is given as much prominence as possible in order to take advantage of the principle of isolation, but at the same time advantage is taken of the display space to show in a less prominent way other goods, thus increasing the total drawing power of the display. Some little of the drawing power of complete isolation and contrast is sacrificed but the increased sales possibilities created by the display of additional items often more than overcome this loss.

(Another article in this series will appear in the next issue.)

SEASONABLE DISPLAYS FOR AUGUST AND SEPTEMBER.

Talcum and face powders	Vacuum bottles
Soaps and bath supplies	Soda fountain, packaged ice cream, bottled soft drinks
Travelers' toilet articles	Cameras and films
Sunburn and ivy poison lotions	Developing, printing and enlarging service
First aid kits	Flavoring extracts and spices
Telephone and mail order service	Insecticides and germicides
Week-end candy and tobacco supplies	

A HOSPITAL CONFERENCE.

Plans have just been announced for the holding of an international hospital conference, probably in 1929. The initiative came from the American group. The American Hospital Association has a committee on international hospital relations, under the Chairmanship of Dr. S. S. Goldwater. It is planned to assemble at the conference the most up-to-date exhibits of hospital construction, administration and equipment. It is hoped by the discussions and exchange of ideas to help raise hospital standards throughout the world.

THE DEPARTMENT OF THE NATIONAL ASSOCIATION OF BOARDS OF PHARMACY

Wilford Harrison, President, Wichita Falls, Texas. J. W. Gayle, Treasurer, Frankfort, Ky. W. P. Porterfield, Chairman of Executive Committee, Fargo, N. D. H. C. Christensen, Secretary, 130 N. Wells St., Chicago, Ill.

ACTIVE MEMBER STATES.

Alabama	Iowa	Nebraska	South Carolina
Arizona	Kansas	Nevada	South Dakota
Arkansas	Kentucky	New Hampshire	Tennessee
Colorado	Louisiana	New Jersey	Texas
Connecticut	Maine	New Mexico	Utah
Delaware	Maryland	North Carolina	Vermont
D. of Columbia	Massachusetts	North Dakota	Virginia
Florida	Michigan	Ohio	Washington
Georgia	Minnesota	Oklahoma	West Virginia
Idaho	Mississippi	Oregon	Wisconsin
Illinois	Missouri	Pennsylvania	Wyoming
Indiana	Montana		

N. A. B. P. CONVENTION PROGRAM.

HOTEL CORONADO, ST. LOUIS, MO. AUGUST 22 AND 23, 1927.

Monday, August 22nd, at 9:00 A.M.—First Session.

1. Call to order—President Wilford Harrison
2. Roll Call
3. Appointment of Committee on Credentials—President Harrison
4. President's Address—Wilford Harrison
5. Appointment of Committee on President's Address
6. Report of Executive Committee—W. P. Porterfield, *Chairman*
7. Report of Secretary—H. C. Christensen
8. Report of Treasurer—J. W. Gayle
9. Report of Committee on Constitution and By-Laws—W. H. Hankins, *Chairman*

Monday, August 22nd, at 2:00 P.M.—Second Session.

1. Report of Legislative Committee—John Culley, *Chairman*
2. Report of Committee on Credentials
3. Appointment of Nominating Committee
4. Report of Advisory Examination Committee—H. C. Christensen, *Chairman*
5. Report of Syllabus Committee—S. A. Williams
6. Report of Special Committee on National Legislation—W. T. Kerfoot, Jr., *Chairman*
7. Report of Committee on Drug Store Ownership Law—Jacob Diner, *Chairman*
8. Verbal Reports of Vice-Presidents:

District No. 1—H. M. Lerou
District No. 2—A. C. Taylor
District No. 3—B. M. Keene
District No. 4—Hugo Peterson
District No. 5—E. V. Zoeller
District No. 6—A. H. King
District No. 7—J. T. Selman
District No. 8—Chas. J. Clayton
District No. 9—A. G. Hulett

9. Appointment of Resolutions Committee.

Monday, August 22nd, at 8 P.M.—Extra Session if deemed necessary.

Tuesday, August 23rd, at 9:00 A.M.—Third Session.

Joint Session—National Association of Boards of Pharmacy and American Association of Colleges of Pharmacy.

PARTIAL OR TENTATIVE PROGRAM.

1. Report of the Fairchilds Scholarship Committee—E. G. Eberle
2. Paper—The Newer Types of Examination—George D. Stoddard, Russell L. Austin
3. Discussion—Are the Standards of the American Association of Colleges of Pharmacy Adequate for State Board Recognition?—Robert P. Fischelis, Charles E. Mollett, A. L. I. Winne, M. N. Ford and others
4. Discussion—General—What Subjects Should Be Added to Board Examinations Because of the Advent of the Three-Year Course?

Tuesday, August 23rd, at 2:30 P.M.—Fourth Session.

1. Report of Committee on President's Address.
2. Report of Advisory Publicity Committee—W. H. Cousins, *Chairman*
3. Report of N. A. B. P. Committee on Prerequisite Legislation—Wm. R. Acheson, *Chairman*
4. Report—Committee on Standards and Requirements for Classification of Colleges of Pharmacy—A. L. I. Winne, *Chairman*
5. Report of Committee on National Certificate—H. C. Christensen, *Chairman*
6. Report of Grievance Committee—Edw. H. Walsdorf, *Chairman*
7. Report of Special Committees
8. Unfinished Business
9. New Business
10. Report of Nominating Committee
11. Election and Installation of Officers

WHAT SHOULD WE DO WITH THE DELINQUENTS?

BY A. L. I. WINNE.

What course should a Board follow in dealing with a person who bobs up and says he is registered in a State, and who holds credentials which seemingly substantiate his claim, but who perhaps has been dropped from the records for years? These men are of two classes—first, the fellows who have secured registration in another State and see no necessity for keeping in good standing in their own States, but later discover that they need certification of their records, and, secondly, the men who drop out of pharmacy for a number of years and see no purpose served in keeping in good standing in pharmacy, but later decide that they would like to resume practicing.

Such cases must come up in every State. How are they treated? And how should they be treated? I suppose in most States they are put into good standing without much ceremony, provided they reasonably satisfy the authorities that they are what they represent themselves to be. There is room for fraud in such procedure, and we ought to take reasonable care of such situations.

Recently in my own State we had a reciprocity application presented by an applicant located in another State, who wanted to register in New Jersey. A search of the records disclosed that he registered here (Virginia) in 1892, and kept in good standing until 1895. We have a provision for annual re-registration. So far as we know this man's record is a blank from that date to this. Ought we to certify to his record, beyond a bare statement that he, or someone of the name he gives, did register in this State thirty-five years ago? Ought we to reinstate him merely by his paying his back renewal fees? Or should we satisfy ourselves that he has been engaged in the practice of pharmacy all these years, and that his record is

clean and clear for all those years? Personally, I believe that we should require that he furnish us with evidence of where he has been and what he has been doing for these thirty-five years before we put the stamp of approval on him. I believe that we should require unquestionable proof of his identity, and that should not be a hard thing for the applicant to furnish if he has conducted himself in a circumspect manner during his long absence from this State.

Perhaps we should not concern ourselves in the matter, but should leave that up to New Jersey, inasmuch as they are asked to extend hospitality to him. What is your idea of the matter? Perhaps your State has worked out a satisfactory solution to this problem.

Loose handling of these situations opens the way for fraud. Stolen credentials and the credentials of dead men might easily be turned to the use of a charlatan. How often has this occurred the country over?

We have all given thought to the matter of the men who wander away from the practice of pharmacy, and after a lapse of years decide to again take up the work. What do we owe to them? Should they be reinstated and allowed to practice a profession with which they have failed to keep up? Certainly the State is in most instances under no obligation to reinstate them without asking them to meet the present-day requirements, but few are made to meet these requirements. Are we fair to the public when we place a license in the hands of a man who has lost touch with the developments of the profession, on the assumption that he originally was qualified and will easily catch up with the procession? What does your State do under these circumstances?

Perhaps the N. A. B. P. can devise solutions for these problems. It would be well worth discussing and helpful to most of us if some set of rules or form of procedure for such cases could be decided upon and put into use.

SUPREME COURT UPHOLDS MINNESOTA ASPIRIN RULING.

A decision of national and far-reaching importance to Pharmacy was handed down by the Supreme Court of Minnesota on July 8, 1927, upholding the judgment of a lower court that the Minnesota Board of Pharmacy had the right to restrict the sale of aspirin to stores in charge of a registered pharmacist.

Those associated with Pharmacy need not be told of the condition prevalent with regard to the sale of aspirin; how the unscrupulous have put upon the market products claiming to be aspirin which are adulterations thereof; how aspirin may be purchased in confectionery, cigar and general stores. This condition had become such a menace that the Minnesota Board of Pharmacy asked the Attorney General of Minnesota for an opinion regarding the sale of aspirin and received the following reply:

"St. Paul, Minn.,
October 3, 1925.

"The State Board of Pharmacy:

"It is provided in Section 5814, G. S. 1923, that no person not a registered pharmacist or a dealer employing and carrying a registered pharmacist in active charge of his place of business shall retail drugs, medicines, or poisons.

"The statute (Section 5805, G. S. 1923) declares that the term "drugs" shall include all substances commonly kept in drug stores and sold for medicinal purposes; but certain articles, among them castor oil, epsom salts, carbonate of soda, saltpetre and senna, commonly kept in

the home, are excluded. Aspirin is not mentioned as one of the excepted articles. It is a well-known coal tar product and harmful if employed to excess. The result of its use is to depress action of the heart, and it is said that its frequent and constant use results in an impairment of the functions of that organ.

"It has been held that the legislature may restrict the sale of harmless as well as harmful medicines to drug stores in charge of a registered pharmacist.

JAMES E. MARKHAM,
Deputy Attorney General."

Briefly, the history of the case leading to the Supreme Court decision is as follows: In November 1926, a charge of selling aspirin illegally was made against the proprietor of a confectionery store. The trial court found the defendant guilty. The counsel for the defendant appealed to the Supreme Court of Minnesota, contending that the trial court was wrong in its ruling as aspirin is a proprietary and patent remedy requiring no special knowledge of drugs for its sale at retail in original packages and that limiting the sale of aspirin to stores in charge of a registered pharmacist in effect creates a monopoly in favor of such stores for the sale of harmless compounds.

The decision handed down by the Supreme Court on July 8, 1927, denies these contentions and upholds the decision of the lower court as follows:

No. 273 Hennepin County Dibell, J.
State of Minnesota, Respondent

Endorsed
26136—vs— Filed July 8, 1927
Grace F. Kaercher, Clerk

Mike Zotalis Appellant.

SYLLABUS.

G. S. 1923, S. 5814, restricting the sales of drugs, medicines and poisons, with certain exceptions, to pharmacists and sellers employing a pharmacist, except when the shop of the seller is more than two miles from a drug store, is a constitutional exercise of the police power, and valid when applied to sales of aspirin.

Judgment affirmed.

OPINION.

The defendant was convicted of the violation of G. S. 1923, S. 5814, which prohibits anyone not a registered pharmacist or a dealer having such a pharmacist in charge of his place of business from retailing drugs or medicines or poisons, excepting, however, 23 articles of common use. He appeals from the judgment.

The defendant conducts a confectionery store in Minneapolis. He is not a pharmacist and does not employ one. He sold aspirin and for selling it was convicted under the statute. The aspirin was in a container, with a label stating that it contained 5-grain aspirin tablets, that a dose was 1 or 2 tablets, and that it was distributed by a designated laboratory and chemical company of Minneapolis.

G. S. 1923, S. 5805, provides that the term "drugs, medicines and poisons" shall include all substances commonly kept in drug stores and used in compounding medicines or sold for medicinal purposes. Aspirin is a coal-tar product commonly kept in drug stores and is used and sold for medicinal purposes. It is a drug or medicine within the statute. It is not a proprietary or patent medicine.

The statute should be sustained if enacted with reasonable reference to public health or welfare. If intended merely to give a monopoly to pharmacists or druggists by restricting sales to them it is not sustainable. It is only sustainable as a police measure.

The legislative thought that the dangers incident to its sale justified regulation and that a restriction of sales to pharmacists or to those under their supervision was effective. It is true that no technical skill is required in making a sale. This does not prove the statute invalid.

As remarked by the trial court, the pharmacist knows where to procure a pure and genuine article and his prescribing physicians will require him to furnish a pure drug.

It is not questioned that the sale of drugs, medicines and poisons may be regulated in the exercise of the police power. State *v.* Donaldson, 41 Minn. 74; State *v.* Hovorka, 100 Minn. 249; 19 C. J. pp. 772–774, SS 5–13. The restriction of the sale of aspirin as provided by the statute is within the legislative discretion. State Board *v.* Matthews, 197 N. Y. 353; People *v.* Smith, 231 N. Y. 531; State Board *v.* Bellinger, 122 N. Y. S. 651. It may be mentioned that G. S. 1923, S. 5805, permits the sale of a commonly used medicine put up for sale by a registered pharmacist when the shop of the seller is more than 2 miles from a drug store. This provision was held valid in State *v.* Donaldson, 41 Minn. 74.

Judgment affirmed.

John W. Dargavel, Secretary of the Minnesota Board of Pharmacy, and other members of that Board deserve much credit for the successful manner in which the case was handled. Due to their untiring efforts, the trail has been blazed and it should not be such a difficult matter now to obtain similar decisions in other States. In taking the position that protection of the public in enforcing the pharmacy laws was the most important factor, the Minnesota Board was practically assured of a favorable decision. So long as Pharmacy continues to emphasize that its most important duty is the welfare of the public it serves, it should encounter little difficulty in obtaining laws and decrees which protect the public and the pharmacist as well.

H. C. C.

CONGRESS OF DOMINICAN REPUBLIC PROHIBITS SALE OF DRUGS AND PREPARED MEDICINES BY OTHERS THAN PHARMACISTS, EXCEPT BY SPECIAL PERMIT.

By law No. 617, approved on March 30, 1927, it is provided that beginning with July 1, 1927, the sale of drugs, prepared medicines and chemical products will be permitted only by pharmacists. The principal articles of law are as follows: Article 1—From July 1, 1927 the sale of drugs, prepared medicines and chemical products will only be permitted by pharmacists. Where there are no pharmacists authorized to sell these products, their sale will be authorized by business houses. Article 2—The owner of a pharmacy or the person in charge, as the case may be, of a drug store or other establishment in which drugs are on sale, will be responsible for any violations of this law, committed by him personally or by his employees. All persons violating any of the provisions of this law for which specific penalty has not been established will be subject to a fine of not less than $25 and not more than $300 or prison of from one month to a year, or to both punishments. Aside from all other penalties that may be established, the sentence of the Tribunal, in case of drugs offered for sale, sold, exchanged, given or distributed in violation of the provisions of this law, will contain a provision for the confiscation and immediate destruction of the drug or drugs in question. (Consul J. J. Murphy, Jr., Santo Domingo.)

OFFICERS OF THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

Arthur A. Noyes of the California Institute of Technology, Pasadena, Cal., is the President of the American Association for the Advancement of Science. The Secretary is Burton E. Livingston whose home address is c/o The Smithsonian Institute Building, Washington, D. C. The general officers of the Committee of one hundred on Scientific Research are Chairman A. A. Noyes, President of the Association, and Secretary Rodney H. True of the University of Pennsylvania. The dates of the annual meetings for this and next year have been fixed. The meeting this year will be held at Nashville beginning December 26th, and the one of the year following in New York City beginning on December 28th.

PROCEEDINGS OF THE LOCAL BRANCHES

"All papers presented to the Association and Branches shall become the property of the Association with the understanding that they are not to be published in any other publication prior to their publication in those of the Association, except with the consent of the Council." —Part of Chapter VI, Article VI of the By-Laws.

ARTICLE III of Chapter VII reads: "The objects and aims of local branches of this Association shall be the same as set forth in ARTICLE I of the Constitution of this body, *and the acts of local branches shall in no way commit or bind this Association, and can only serve as recommendations to it.* And no local branch shall enact any article of Constitution or By-Law to conflict with the Constitution or By-Laws of this Association."

ARTICLE IV of Chapter VII reads: "Each local branch having not less than 50 dues-paid members of the Association, holding not less than six meetings annually with an attendance of not less than 9 members at each meeting, and the proceedings of which shall have been submitted to the JOURNAL for publication, may elect one representative to the House of Delegates."

Reports of the meetings of the Local Branches shall be mailed to the Editor on the day following the meeting, if possible. Minutes should be typewritten, with wide spaces between the lines. Care should be taken to give proper names correctly and manuscript should be signed by the reporter.

BALTIMORE.

The last spring meeting of the Baltimore Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION was held at the Hotel Emerson on May 31, 1927, President Kantner presiding.

Dr. E. W. Schwartze of the Mellon Institute of Industrial Research, University of Pittsburgh, spoke on the subject:

PAST, PRESENT AND FUTURE ROLE OF PHYSIOLOGICAL ASSAYS IN MEDICINE.

Dr. Schwartze stated that the Physiological Assay as known in the pharmaceutical world was proposed for the assaying of the pharmacodynamic potency of drugs which could not be assayed by chemical means, mentioning that each individual assay may be considered as temporary, depending upon the finding of a better method, or discovery of chemical methods. He further stated that the particular assays performed are also influenced by the trend of therapeutics, since it is entirely within the province of the physician to determine what drugs he should use.

Dr. Schwartze mentioned that historically the present-day practical physiological assay was evolved from the academic physiological assay, which is too elaborate for practical use and which is designed, often extemporaneously, for purely research purposes. He stated that the historical record of the practical physiological assay is divisible into three stages: (1) That of the academic ideal, during which time tests were being standardized and technicians trained to determine if the tests were practicable of commercial application. (2) The stage in which they were optional, namely the age of the scope of the U. S. P. IX. (3) The present stage in which they are compulsory (U. S. P. X). This record of growth is evidence of the firm foothold which the physiological assay have gained in the drug world.

He pointed out that practically, the physiological assay accomplished all that the physician accomplished heretofore when he attempted to standardize a drug of uncertain potency upon his patients. It does more, in that it places at his command certain drugs the standardization of which upon patients would be fraught with considerable danger.

Dr. Schwartze stated that physiological assays include the testing of serums and of such drugs as salvarsan and are therefore, not limited simply to drugs in the narrow sense. He pointed out that the testing of salvarsan represents an extension of the original idea, because the purpose of this test is to eliminate preparations objectionably toxic, and prophesied that we may confidently look forward to the development of other tests to demonstrate what a drug should not be as well as tests demonstrating what it should be.

In conclusion, Dr. Schwartze remarked that physiological assays are strictly quantitative, in that they do not necessarily identify a drug, but only measure potency; and moreover, sophistication is possible which must be controlled by other means.

J. Thomas Holland of the firm of Holland & Thompson, Centreville, Md. was a visitor

and expressed pleasure in being able to attend a meeting of the Baltimore Branch.

Mrs. George Kaiser, who is studying at the Peabody Conservatory of Music, added to the pleasure of the evening by contributing several well-selected vocal solos.

The next meeting of the Baltimore Branch will be held following the Convention of the AMERICAN PHARMACEUTICAL ASSOCIATION in St. Louis.

B. OLIVE COLE, *Secretary, Treasurer.*

ASSOCIATION BUSINESS

AD INTERIM BUSINESS OF THE COUNCIL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION, 1926–1927.

Office of the Secretary, 10 West Chase St., Baltimore, Md.

LETTER NO. 12.

July 23, 1927.

To the Members of the Council:

116. Tentative Program for the Diamond Jubilee Meeting. Motion No. 43 (see Council Letter No. 11, page 697) has been carried and a majority of the members of the council indicated their preference for Program *A*. The St. Louis Committee has been so notified and the program of the meeting will be in accordance with this plan.

117. Motion No. 44 (see Council Letter No. 11, page 698) and Motion No. 45 (see Council Letter No. 11, page 73) have been carried. Applicants for membership numbered 178 to 194 inclusive and applicants for membership numbered H-403 to H-452 inclusive are, therefore, declared elected.

118. Affiliation of the A. Ph. A. with the American Conference on Hospital Service. In accordance with a motion passed at the first meeting of the Council held in Philadelphia (see Council Letter No. 1, item 24) the Secretary has been in correspondence with several persons in reference to the conditions of affiliation. It is learned that:

"The Conference was organized some years ago for the purpose of improving hospital service in the United States of America and the Dominion of Canada. Twelve national organizations participated in the formation of the Conference, and several societies have joined since. The membership, as you doubtless know, includes the American Hospital Association, the American Medical Association, the American Nurses' Association, the Association for Industrial Physicians and Surgeons, the Catholic Hospital Association, the International Compensation Board, the National League of Nursing Education, the Medical Department of the Army and Navy, and the United States Public Health Service.

"Delegates to meetings consist of two duly accredited representatives of each constituent society. The revision of the constitution is under consideration with a view to the establishing of a limited class of honorary members who may serve on committees, but who will not be entitled to hold office.

"The principal permanent or continuing service of the Conference is the support of the Hospital Library and Service Bureau, which draws its financial sustenance from a number of sources, chiefly outside of the organization itself. The constitution provides that the annual dues of member societies shall be $25."

With respect to the Hospital Library and Service Bureau, the following information has been gathered:

"I am very glad to have the opportunity of telling you of the work of the Hospital Library and Service Bureau. It is an organization, not for profit, which was developed in the fall of 1920 for the collection and dissemination of information on all phases of hospital organization, construction, equipment and administration. It serves, without charge, persons engaged in hospital and public health work, but limits its service to persons in this special field. The Bureau is financed by voluntary contributions from various national hospital, nursing, medical, surgical, social service, dietetic, public health, and similar organizations, aided by grants from the Rockefeller Foundation, Carnegie Corporation, and the Commonwealth Fund.

"The service is not geographically limited. Hospitals and public health workers in foreign countries are utilizing this service to a considerable extent.

"There are two features of the work of the Bureau to which I should like to direct your attention:

"1. It does not give advice, but merely collects information, from which the inquirer may make his own deductions. Because of the impartial and unbiased manner of conducting the work of the Bureau, it is, in most cases, possible to present for the use of an inquirer, both sides of a given hospital topic.

"2. All of the work of the Bureau to date has been in direct response to request. This means that nothing theoretical has been collected. All of the material which has been assembled is practical, and is constantly being used. The advantages of operating under a plan are obvious. It is true that this occasionally results in our having a preponderance of material on certain phases of hospital work, but as the months go by and inquiries on other subjects come in, a fairly good balance is maintained."

Dr. S. S. Goldwater, President of the American Conference on Hospital Service, in submitting part of the information given above wrote as follows:

"Representing as it does an essential branch of hospital service, it would seem to me to be most appropriate for the AMERICAN PHARMACEUTICAL ASSOCIATION to join the Conference, and I have no doubt that the present member organizations would welcome its adhesion to the group."

This proposal to become affiliated with the Conference has been referred to the Committee on Finance and it has the approval of the Committee so far as the membership charge of $25.00 per year is concerned.

A motion to approve the affiliation or comments from the Council are invited.

119. Investment of Funds. The following cash balances are now held on deposit in the several permanent funds of the ASSOCIATION mentioned:

Endowment Fund	$ 3000.00
Centennial Fund	1000.00
Ebert Legacy Fund	1500.00
Life Membership Fund	6500.00
Research Fund	11000.00
Procter Monument Fund	3000.00

and they draw interest at the rate of three per cent compounded monthly. The Treasurer has recently been investigating the possibility of the investment of these funds in securities meeting the requirements of Article 4 of the Constitution and has been offered for this purpose City of Baltimore, four per cent, registered bonds, due in 1959 at 99½ and accrued interest net. As these bonds meet the constitutional requirements in all respects, and as they represent the most favorable offer as to cost and return, the Treasurer recommends that he be authorized to invest the cash balances listed above in these securities. This proposal has been submitted to the Committee on Property and Funds and the Secretary is advised by the Chairman of that Committee that it has the Committee's approval.

(Motion No. 46.) It is moved by Holton that the Treasurer be authorized to invest the cash balances listed above in City of Baltimore, four per cent registered bonds, due in 1959, at 99½ and accrued interest net.

120. Application to use the Text of the National Formulary V. The following communication has been received from Chairman A. G. DuMez of the Committee on Publications:

"Messrs. Lea & Febiger of Philadelphia, Pa., have made application to use portions of the text of the National Formulary V, in a new edition of Culbreth's Materia Medica approximately as it was used in previous editions of this textbook. In view of the way the text was used in previous editions of this book, I feel confident that it will be properly used in the new edition and, therefore, recommend to the Council that permission be granted to Messrs. Lea and Febiger to use portions of the text of the National Formulary V for comment in the new edition of Culbreth's Materia Medica and that the minimum fee of $5.00 be charged for this purpose."

(Motion No. 47.) It is moved by DuMez that Messrs. Lea and Febiger of Philadelphia, Pa., be granted permission to use the text of the N. F. V for partial reproduction in Culbreth's Materia Medica and at the usual charge of $5.00.

E. F. KELLY, *Secretary*

When buying your ticket to St. Louis for the Diamond Anniversary meeting be certain to secure a certificate from the R. R. Agent—it will save you one half on the return fare.

EDITORIAL NOTES

Editor: E. G. EBERLE, 10 West Chase St., Baltimore, Md.

Members of the Council, A. PH. A.: S. L. HILTON, *Chairman;* CHARLES H. LAWALL, *Vice-Chairman;* E. F. KELLY, *Secretary;* H. V. ARNY, A. G. DUMEZ, R. P. FISCHELIS, H. C. CHRISTENSEN, J. A. KOCH, J. H. BEAL, W. B. DAY. *Ex-Officio Members:* T. J. Bradley, *President;* GEORGE JUDISCH, A. G. HULETT, *Vice-Presidents;* C. W. HOLTON, *Treasurer;* E. G. EBERLE, *Editor of the Journal;* A. G. DUMEZ, *Editor of the Year Book;* JACOB DINER, *Chairman of the House of Delegates.*

Collaborators: The Members of the Council; E. FULLERTON COOK, *Chairman,* U. S. P. Revision Committee; W. L. SCOVILLE, *Chairman,* N. F. Revision Committee; the Chairmen of the Sections, A. PH. A.; JOHN C. KRANTZ, JR., H. M. FASER, ADLEY B. NICHOLS, BERNARD M. KEENE, W. F. SUDRO; D. B. R. JOHNSON, *President,* A. A. C. P.; CHARLES B. JORDAN, *Chairman,* Executive Committee, A. A. C. P.; WILFORD HARRISON, *President,* N. A. B. P.; HENRY C. CHRISTENSEN, *Secretary,* N. A. B. P.

NEW AND NONOFFICIAL REMEDIES.

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

W. A. PUCKNER, *Secretary.*

ETHYLENE FOR ANESTHESIA (See New and Nonofficial Remedies, 1927, p. 50).

Ethylene-C. L. P.—A brand of ethylene for anesthesia-N. N. R.

Manufactured by the U. S. Industrial Chemical Co., New York (Certified Laboratory Products, Glendale, Calif., distributor). No U. S. patent or trademark.

PROTEIN EXTRACTS DIAGNOSTIC-P. D. & CO. (See New and Nonofficial Remedies, 1927, p. 40).

The following products have been accepted:

Alfalfa Pollen Protein Extract Diagnostic-P. D. & Co.‡ *Bean (Kidney) Protein Extract Diagnostic-P. D. & Co.**

Prepared by the method given in New and Nonofficial Remedies, 1927, p. 40.

TYPHOID VACCINE (See New and Nonofficial Remedies, 1927, p. 365).

Parke, Davis & Company, Detroit.

Typhoid Vaccine (Prophylactic).—(See New and Nonofficial Remedies, 1927, p. 369.) Also marketed in packages of one 20-cc. vial (Bio. 431) containing 1000 million killed typhoid bacilli per cubic centimeter.

Typhoid-Paratyphoid Vaccine (Prophylactic).—(See New and Nonofficial Remedies, 1927, p. 369). Also marketed in packages of one 20-cc. vial (Bio. 446) containing 1000 million killed typhoid bacilli and 750 million each of killed paratyphoid bacilli A and B per cubic centimeter.

HORLICK'S MALTOSE-DEXTRIN MILK MODIFIER.—A mixture containing approximately: maltose, 63 per cent; dextrin, 19.5 per cent; protein, 11.5 per cent; fat, 1.4 per cent; moisture, 2 per cent and ash, 2.6 per cent.

Actions and Uses.—On the claim that maltose is more readily assimilable than other forms of sugar, Horlick's maltose-dextrin milk modifier is proposed to supplement the carbohydrate of cow's milk.

Dosage.—Horlick's maltose-dextrin milk modifier may be used in amounts to meet the requirements of a desired feeding schedule.

Manufactured by Horlick's Malted Milk Corporation, Racine, Wis. No U. S. patent or trademark.

Horlick's maltose-dextrin milk modifier is prepared by the action of diastase on wheat flour in the presence of water. The extraction is brought to dryness under a high vacuum. Approximately 2 per cent of potassium bicarbonate is added in the manufacture of the product; about 0.66 per cent while the product is in the liquid extractive state, and about 1.34 per cent after the product has been dried.

Horlick's maltose-dextrin milk modifier is an ivory-colored or cream-white powder, having a sweet taste. It is soluble in water or milk and is slightly hygroscopic. When in an aqueous solution (1 in 20) it is neutral or slightly alkaline to phenolphthalein and is alkaline to methyl orange.

Add a few drops of solution of iodine to an aqueous solution of Horlick's maltose-dextrin milk modifier (1 in 10): no blue color is produced (*absence of starch*).

Determine the maltose content of Horlick's maltose-dextrin milk modifier gravimetrically by the Munson & Walker method. Determine the fat content by extraction in an extraction tube, using the neutral Roese-Gottlieb method; evaporate the extraction and weigh the residue. Determine the protein content by calculation from the nitrogen content as found by the Kjeldahl-Gunning-Arnold method.

—From *Jour. A. M. A.*, June 18, 1927.

B. ACIDOPHILUS MILK-FAIRCHILD.—A whole milk cultured with *B. acidophilus.* It contains not less than 50 millions of viable organisms (*B. acidophilus*) per cubic centimeter at the time of sale.

Actions and Uses.—See Lactic Acid-Producing Organisms and Preparations, New and Nonofficial Remedies, 1927, p. 216.

Dosage.—Ordinarily the contents of one bottle (200 cc.) may be taken daily—at one time, or divided as preferred. The quantity

may be greatly increased by direction of the physician, especially at the beginning of the treatment when the contents of two or three bottles may be consumed daily. *B. acidophilus* milk-Fairchild is marketed in bottles containing 200 cc. (7 fluidounces); it must be kept in a cool place and should be used prior to the date stamped on the label.

Manufactured by Fairchild Bros. and Foster, New York. No U. S. patent or trademark.

—From *Jour. A. M. A.*, June 25, 1927.

CROTALUS ANTITOXIN.—An antitoxic serum prepared by immunizing animals against the venom of snakes of the crotalus family.

Actions and Uses.—Evidence has accumulated to show that the venom of certain snakes may be neutralized by the employment of a serum obtained from animals that have been injected with venom from a snake of the same family. Crotalus antitoxin is used to neutralize the venom injected by the bite inflicted by members of the crotalus family.

Dosage.—The serum is administered intramuscularly; but in cases seen late or in the presence of severe symptoms it may be administered intravenously.

H. K. Mulford Company, Philadelphia.

Antivenin (Nearctic Crotalidae).—North American Anti-Snake-Bite Serum.—An antitoxic serum prepared by injecting horses with venoms from serpents of the North American species of the family *Crotalidae* (Rattle Snake, 75 per cent; Copperhead, 12½ per cent; and Water Moccasin, 12½ per cent). It is claimed to have neutralizing effect against the venom of the species represented. The venom is extracted from the snakes and promptly desiccated. The mixture of the venoms is injected subcutaneously into horses in fractional doses until immunity is established. The animal is bled, and the plasma is concentrated by a salting-out process. The potency of the product is determined by tests on pigeons, the maximum amount of venom neutralized by 1 cc. of the serum being taken as the titer of the product.

Marketed in syringes containing 10 cc. (a single dose).

—From *Jour. A. M. A.*, July 2, 1927.

PERSONAL AND NEWS ITEMS.

Prof. Elmer Kraemer, of the University of Wisconsin, has been engaged in colloidal chemistry work during the summer months, at DuPont's Laboratories.

David F. Jones was honored with the degree of Doctor of Science by the University of South Dakota.

Pharmacists John Cameron and Moody Meng of Peking, have prepared a booklet on "Fitting Up a Private Dispensary in China." There is a great deal of information contained therein which will be serviceable for those who intend the fitting out of a dispensary in China. A list of the necessary items are given and the approximate cost. The article also contains considerable information relative to the fitting out of a dispensary.

The 20th annual report of the American Druggists' Fire Insurance Company, printed in booklet form, shows a group of representatives from 43 States, well known among pharmacists in the respective States; most of them formerly engaged in pharmacy. The insurance in force is now nearly 63 millions.

A gift of $400,000 from Pierre S. du Pont to further the cause of education in Delaware was announced July 2nd, bring Mr. du Pont's total donations for this purpose to more than $4,000,000 in nine years.

PREPARED MEDICINE TRADE OF U. S. LEADS WORLD.

The United States is the world's largest producer, consumer and exporter of prepared medicines, according to the United States Commerce Department. The latest census shows that the value of patent medicines and druggists' preparations manufactured in this country in 1925 was nearly $320,000,000. During the same period exports had a value of nearly $20,000,000.

The total import trade of the world in all forms of medicinals amounts to approximately $110,000,000 each year, about two-thirds of which represents prepared medicines and medicinal specialties. The United States enjoys between 20 and 25 per cent of this international trade in prepared medicines. There is no country where the American drug salesman has not penetrated, and the rapidly increasing volume of the export trade of the United States indicates that his efforts have been fruitful of results.

THE N. A. R. D. CONVENTION IN KANSAS CITY.

The annual convention of the National Association of Retail Druggists will be held in Kansas City, September 19th–23rd. The Headquarters will be at the Muehlebach; the convention and exhibit will be held in Kansas City's new Shrine Temple, one of the rooms of which will seat 3000 with a stage capacity for 600. The room for the exhibit has a floor area of 15,000 square feet.

The Local Convention Committee is presided over by the following officers and chairmen: C. W. Hutchason, George A. Hofer, C. C. Booher, H. S. Chambers, W. M. Federmann, Hugo Brecklein, C. M. Owen, J. Will Kelley, Paul L. Hess, L. B. Coffey and Carl B. Casper.

OBITUARY.

HENRY CHARLES SCHRANCK.

Henry C. Schranck, aged 74 years, member of the AMERICAN PHARMACEUTICAL ASSOCIATION since 1876, died July 24th at his home in Milwaukee. Mr. Schranck engaged in the drug business in Milwaukee on his own account in 1876; here he developed a line of flavorings and, later, branched out into more extended manufacturing of such products and soda fountain supplies.

He was active as officer and member of the Wisconsin Pharmaceutical Association and served for a number of years on the State Board of Pharmacy and for a time as its President. He was Local Secretary for the 1884 A. PH. A. meeting at Milwaukee.

Mr. Schranck served for ten successive terms as member of the Common Council of the City of Milwaukee. He was active in musical circles and a member of a number of clubs—Wisconsin Club, Milwaukee Athletic Club, Old Settlers' Club, etc. Mr. Schranck was an alumnus of New York College of Pharmacy. He is survived by his widow, Elizabeth M. Schranck, and five sons—Valentine E., Henry C., Jr., Walter J., George and Alvin. A sketch of the deceased will be found in the November JOURNAL A. PH. A. for 1926, p. 955.

FREDERICK WILLIAM SCHUELLER.

Fred W. Schueller, member of the AMERICAN PHARMACEUTICAL ASSOCIATION since 1880, died at his home in Columbus, O., March 19, 1927. He was born in Bayreuth, Germany, June 5, 1849, and came to the United States with his parents, in 1854. His father, August J., was the owner of "Adler Apotheke" in Bayreuth and a store under the name of "Eagle Drug Store" was established by the consolidation of two drug stores in Columbus, one owned by August J. and the other by a brother, Ernst, who died in 1863. After 1877 the Eagle Drug Store was conducted and owned by the deceased until 1912, when he retired, disposing of the well-known Columbus landmark to Bruno Schreiber. The family is identified with the history of Columbus, especially as it relates to the drug business and the practice of medicine. Mrs. Schueller died last year and no children survive the deceased.

We are indebted to Dr. Erwin W. Schueller, a nephew, for the data of this brief sketch.

EDWARD A. BAER.

Edward A. Baer, member of the AMERICAN PHARMACEUTICAL ASSOCIATION and a pioneer pharmacist of Bakersfield, California, died June 18, 1927. Mr. Baer was born in Los Angeles and with his brother, Charles A., conducted the Baer Drug Co., of Bakersfield. The latter and another brother, H. Baer of Los Angeles; his widow, Lillie Baer; a daughter Mrs. Henry Greenhood and a son, Louis Baer, survive the deceased.

Mr. Baer was a former member of the California Board of Pharmacy and a Past-President of the California Pharmaceutical Association. The esteem of his fellow-pharmacists is expressed in resolutions which testify to the high regard in which he was held as friend and a business man of highest ideals. The resolutions deplore the loss of a sincere and true friend.

GEORGE H. SCHOELL.

George H. Schoell, member of the AMERICAN PHARMACEUTICAL ASSOCIATION, pharmacist of St. Paul, Minn., died July 7th, after an illness of a year or more. The deceased was born at Belle Plaine, Minn., 1883. After graduating in pharmacy from Drews School he engaged in the drug business and at the time of his death was the owner, with William Kohnke, of two pharmacies in St. Paul.

Mr. Schoell was greatly interested in the work of the local association and had served as Secretary of that organization; he was a member of the Veteran Druggists' Association.

The deceased was highly esteemed as friend, citizen and member of the East Presbyterian Church, St. Paul, of which he was a trustee. He leaves a widow and two children.

Mrs. Frances Meyer, widow of Christian F. G. Meyer, founder of the Meyer Brothers Drug Company, St. Louis, died July 4th in that city at the age of ninety-two years. Four sons, Carl F. G. Meyer, President of the wholesale drug company, Otto P., Adolph C., and Gustave J. Meyer, and one daughter, Mrs. F. W. Sihler, survive.

CORNER STONE LAYING OF ST. LOUIS COLLEGE OF PHARMACY.

The corner stone of the St. Louis College of Pharmacy building at Euclid and Parkview Place was laid with appropriate ceremonies July 12th.

SOCIETIES AND COLLEGES.

DIAMOND ANNIVERSARY MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION, CORONADO HOTEL, ST. LOUIS, AUGUST 22 TO 27, 1927.

A few additions will be made to programs of the Sections and of other bodies which will appear in Program now being completed for the meeting.

GENERAL PROGRAM FOR SEVENTY-FIFTH ANNUAL MEETING, A. PH. A.

All official meetings of the Convention will be held in Coronado Hotel.

MONDAY, AUGUST 22ND.

9:00 A.M. Meeting of the Council, A. PH. A. *Card Room.*
9:00 A.M. National Association Boards of Pharmacy. *Green Room.*
9:00 A.M. American Association of Colleges of Pharmacy (Meeting of Executive Committee). *Room A.*
Teachers' Conferences (Chemistry Section). *Room B.*
(Practical Pharmacy Section.) *Room C.*
(Materia Medica, Pharmacognosy and Botany Section.) *Room D.*
2:00 P.M. National Association Boards of Pharmacy. *Green Room.*
2:00 P.M. American Association of Colleges of Pharmacy. *Bradley Hall.*
2:00 P.M. Baseball Game. *Sportsman's Park.* For Ladies only.
8:00 P.M. National Association Boards of Pharmacy. *Green Room.*
8:00 P.M. American Association of Colleges of Pharmacy. *French Room.*
8:00 P.M. Musicale. Coronado Hotel. For Ladies only. *Bradley Hall.*

TUESDAY, AUGUST 23RD.

9:00 A.M. Joint Session National Association Boards of Pharmacy and American Association of Colleges of Pharmacy. *Bradley Hall.*
1:30 P.M. First Session House of Delegates, A. PH. A. *Bradley Hall.*
2:30 P.M. National Association Boards of Pharmacy. *Green Room.*
2:30 P.M. American Association of Colleges of Pharmacy. *French Room.*
2:30 P.M. Theatre Party for Ladies.
6:30 P.M. Testimonial Dinner to President Bradley. The President's address will be delivered and will be the only item of business at this dinner. The dinner will be followed by a Goodfellowship Meeting. *Bradley Hall.*
Dinner Dance. *Green Room.*

WEDNESDAY, AUGUST 24TH.

9:00 A.M. General Session, A. PH. A. *Bradley Hall.*
2:00 P.M. House of Delegates, A. PH. A. *Bradley Hall.*
2:00 P.M. Card Party. Coronado Hotel. For Ladies only. *Green Room.*
8:00 P.M. Opera. For all who are registered.

THURSDAY, AUGUST 25TH.

9:00 A.M. Council, A. PH. A. *Card Room.*
9:00 A.M. First Session Section on Historical Pharmacy. *Rooms B and C.*
9:00 A.M. First Session Scientific Section. *French Room.*
9:00 A.M. First Session Practical Pharmacy and Dispensing. *Room —.*
9:00 A.M. First Session Section on Education and Legislation. *Room D.*
9:00 A.M. First Session Women's Section. *Room A.*
12:00 M. Veterans' Luncheon. *Green Room.*
2:00 P.M. General Session, A. PH. A. *Bradley Hall.*
2:30 P.M. Auto Trip around St. Louis. For Ladies only.
7:30 P.M. First Session Section on Commercial Interests. *Room D.*
Second Session Section on Historical Pharmacy. *Rooms B and C.*
Joint Session Section on Practical Pharmacy and Dispensing and Scientific Section. *Bradley Hall.*
8:00 P.M. Theatre Party. For Ladies only.

FRIDAY, AUGUST 26TH.

9:00 A.M. House of Delegates, A. PH. A. *Green Room.*
12:00 M. Luncheon and Smoker, Men. *Bradley Hall.*
2:00 P.M. Second Session Section on Commercial Interests. *Room D.*
Second Session Section on Education and Legislation. *Rooms B and C.*

Second Session Section on Practical Pharmacy and Dispensing. *French Room.*

Second Session Scientific Section. *Green Room.*

2:30 P.M. Card Party, Ladies. *Bradley Hall.*

7:00 P.M. Final Session House of Delegates, A. PH. A. *Bradley Hall.*

9:00 P.M. Final General Session, A. PH. A. *Bradley Hall.*

10:30 P.M. Reorganization Meeting of the Council, A. PH. A. *Card Room.*

SATURDAY, AUGUST 27TH.

9:00 A.M. Trip to the Zoo and to the Botanical Gardens.

12:00 M. Picnic Box Luncheon at the Missouri Botanical Gardens.

THE GENERAL SESSIONS OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

All General Sessions will be held in Bradley Hall.

Association Officers: *President,* Theodore J. Bradley; *Honorary President,* W. H. Rogers; *First Vice-President,* George Judisch; *Second Vice-President,* A. G. Hulett; *Secretary,* E. F. Kelly; *Treasurer,* C. W. Holton; *Editor of the Journal,* E. G. Eberle; *Editor of the Year Book,* A. G. DuMez.

Officers-Elect: *President,* Charles W. Johnson; *First Vice-President,* Ambrose Hunsberger; *Second Vice-President,* Joseph Jacobs; *Members of the Council,* H. V. Arny; George M. Beringer; Theodore J. Bradley.

Officers of the Council: *Chairman,* S. L. Hilton; *Vice-Chairman,* Charles H. LaWall; *Secretary,* E. F. Kelly.

Officers of the House of Delegates: *Chairman,* Jacob Diner; *Vice-Chairman,* L. A. Seltzer; *Secretary,* E. F. Kelly.

Sessions: Tuesday, August 23rd, 6:30 P.M., Testimonial Dinner to President Theodore J. Bradley; Wednesday, 9:00 A.M., August 24th; Thursday, 2:00 P.M., August 25th; Friday, 9:00 P.M., August 26th.

Tuesday, August 23rd, 6:30 P.M. Testimonial Dinner to President Theodore J. Bradley. The only item of business will be the President's Address.—Speakers are named in Convention Program.

WEDNESDAY, AUGUST 24TH, 9:00 A.M.—*First General Session of the Association.*

1. Reading of Communications.
2. Report of the Secretary, E. F. Kelly
3. Report of the Treasurer, C. W. Holton.
4. Annual Report of the House of Delegates.
5. New Business.
6. Address—"History and Achievements of the AMERICAN PHARMACEUTICAL ASSOCIATION," Dr. J. H. Beal.

THURSDAY, AUGUST 25TH, 2:00 P.M.—*Second General Session of the Association.*

1. Minutes of the First General Session.
2. Reading of Communications.
3. Report of the House of Delegates.
4. Report of the Headquarters Building Committee.
5. Report of the Headquarters Building Campaign Committee.
6. Address—"The Value of Research and Its Practical Applications," Dr. A. G Pohlman.
7. Unfinished Business.
8. New Business.

FRIDAY, AUGUST 26TH, 9:00 P.M.—*Final General Session of the Association.*

1. Minutes of the Second General Session.
2. Final Report of the House of Delegates.
3. Presentation of the Ebert Prize.
4. Presentation of National Formulary Honorarium to Chairman W. L. Scoville.
5. Unfinished Business.
6. Installation of Officers.
7. Final Adjournment.

COUNCIL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

All Sessions of the Council will be held in the Card Room.

Officers and Members of the Council: *Chairman,* S. L. Hilton; *Vice-Chairman,* Charles H. LaWall; *Secretary,* E. F. Kelly.

Other Members: H. V. Arny, A. G. DuMez, R. P. Fischelis, H. C. Christensen, J. A. Koch, J. H. Beal, W. B. Day, C. H. LaWall.

Ex-Officio Members: *President,* T. J. Bradley; *First Vice-President,* George Judisch; *Second Vice-President,* A. G. Hulett; *Secretary,* E. F. Kelly; *Treasurer,* C. W. Holton; *Editor of the Journal,* E. G. Eberle; *Editor of the Year Book,* A. G. DuMez; *Chairman of the House of Delegates,* Jacob Diner.

Sessions: Monday, August 22nd, 9:00 A.M.; Thursday, August 25th, 9:00 A.M.; Friday, August 26th, 10:30 P.M. Reorganization Meeting of the Council.

House of Delegates.

The session on Friday at 9:00 A.M., will be held in the Green Room, all other sessions will be held in Bradley Hall.

Officers: *Chairman*, Jacob Diner; *Vice-Chairman*, L. A. Seltzer; *Secretary*, E. F. Kelly.

Sessions: Tuesday, August 23rd, 1:30 P.M.; Wednesday, August 24th, 2:00 P.M.; Friday, August 26th, 7:00 P.M., Final Session of the House of Delegates.

TUESDAY, AUGUST 23RD, 1:30 P.M.—*Bradley Hall.*

1. Call to order.
2. Roll Call of Delegates.
3. Reading and Adopting of the Minutes.
4. Opening Remarks by the Chairman.
5. Appointment of Committee on Nominations.
6. Appointment of Committee on Resolutions.
7. Receipt of the Annual Report of the Council.
8. Receipt of resolutions, reports and other communications, all of which shall be in writing.
9. New Business.
10. Adjournment.

WEDNESDAY, AUGUST 24TH, 2:00 P.M.—*Bradley Hall.*

1. Call to Order.
2. Roll Call of Delegates.
3. Reading and Adopting of the Minutes.
4. Receipt of reports and other communications from the Association, the Council and the Sections.
5. Receipt of resolutions, reports and other communications, all of which must be in writing. Reports of the Committees on Nominations, on Resolutions and on Place of Meeting will be received.
6. New Business.
7. Unfinished Business.
8. Nomination of officers of the Association (three candidates each for the offices of President, First Vice-President and Second Vice-President, and nine candidates for the Council to be elected by mail ballot.
9. Election of the Honorary President, Secretary and Treasurer of the Association upon nomination of the Council.
10. Election of the Chairman and Vice-Chairman of the House of Delegates.
11. Selection of the Time and Place of the next annual meeting.
12. Adjournment.

FRIDAY, AUGUST 26TH, 9:00 A.M.—*Green Room.*

1. Call to Order.
2. Roll Call of Delegates.
3. Reading and Adopting of the Minutes.
4. Receipt of reports and other communications from the Association, the Council and the Sections.

Reports of the Committees on Local Branches, on Membership, on State and National Legislation, on the U. S. P., on the Recipe Book, on Horticultural Nomenclature, on Physiological Testing, on Weights and Measures, on the William Procter, Jr., Memorial Fund, on International Pharmaceutical Nomenclature, on Standard of Drugs and Chemical Products, on Coöperative Publicity, on Pre-Requisite Legislation, on Biological Products and on Pharmacy Week, will be received.

5. Receipt of resolutions, reports and other communications all of which shall be in writing. Reports of the Committees on Resolutions, on Patents and Trade Marks and on Status of Pharmacists in the Government Service will be received.
6. Unfinished Business.
7. New Business.
8. Adjournment.

FRIDAY, AUGUST 26, 7:00 P.M.—*Bradley Hall.*

1. Call to Order.
2. Roll Call of Delegates.
3. Reading and Adoption of the Minutes.
4. Receipt of reports and other communications from the Association, the Council and the Sections.
5. Receipt of resolutions, reports and other communications all of which must be in writing. The final report of the Committee on Resolutions will be received.
6. Unfinished Business.
7. Installation of the Chairman and Vice-Chairman of the House of Delegates.
8. Adjournment.

THE SECTIONS OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

Scientific Section.

The first session of the Scientific Section will be held in the French Room, the Joint

Session in Bradley Hall and the final Session in the Green Room.

Officers: *Chairman*, J. C. KRANTZ, Jr.; *First Vice-Chairman*, L. W. ROWE; *Second Vice-Chairman*, J. C. MUNCH; *Secretary*, Paul S. PITTENGER; *Delegate to the House of Delegates*, F. F. BERG.

PROGRAM.

THURSDAY, 9:00 A.M.—*First Session.*

1. Chairman's Address, Report of Secretary, General Business.

Papers.

2. *Pharmacology.*
   "Notes on the Spectrum and Pharmacology of Chlorophyll," Frederick Grill.
   "The Trend in Internal Medicine," Albert Schneider.
   "Ozone in the Treatment of Mouth Infections and of Tuberculosis" (with demonstration of Apparatus), Albert Schneider.
   "Antivenin (Nearctic Crotalidæ)," J. C. Peacock.
   "The Relationship of Chemical Structure to Pharmacological Action," Charles W. Bauer.
3. *Biologic Assays.*
   "The Resistance of Rats to Repeated Doses of Aconitine," J. C. Munch and G. S. Gittinger.
   "The Lethal Dose of Aconitine to Rats," J. C. Munch and G. S. Gittinger.
   "Notes on Digitalin Standardization," L. W. Rowe.
   "Causes of Deterioration of Strophanthus Seed during Storage," Elizabeth Pickering.
   "Temperature Regulator," Paul S. Pittenger.
   "Care of Animals for Biologic Assay," Paul S. Pittenger.
   "The Effect of Certain Defatting Solvents upon the Stability of Fluidextract of Ergot," J. C. Munch, G. S. Gittinger and E. W. Schwartze.
4. *Plant Chemistry.*
   "The Non-Volatile Constituents of Mentha Piperita," H. A. Braun and Edward Kremers.
   "A Chemical Study of Poison Star Anise," S. Y. Chen and Edward Kremers.
   "Cassia Red," S. S. Chao and Edward Kremers.
   "A Preliminary Chemical Study of the Fruits of Pittosporum Resiniferum," A. J. Schwarz and Edward Kremers.
   "An Investigation of Ginger and its Preparations," Joseph F. Clevenger.

THURSDAY, 7:30 P.M.—*Joint Session Scientific Section and Section on Practical Pharmacy and Dispensing.*

5. SYMPOSIUM ON U. S. P. AND N. F.
   Report on U. S. Pharmacopœia, E. Fullerton Cook.
   Report on National Formulary, Wilbur L. Scoville.
   Report on A. PH. A. Receipe Book, J. Leon Lascoff and Ivor Griffith.
   Report of the Committee on Ebert Prize, J. C. Munch.
   "Suggestions for the Improvement of the Text of the Pharmacopœia with Special Reference to the Definitions," H. H. Rusby.
   "The Effect of Under Education upon Research in Pharmaceutical Science," Frederick J. Wulling.

THURSDAY, 9:30 P.M.—*Second Session.*

6. *Assay Methods.*
   "American Wormseed Oil," R. J. Pauly and Edward Kremers.
   "Assay of Theobromide-Sodio-Salicylate, U. S. P.," John T. Stearn.
   "The Analysis and Characterization of Neoarsphenamine," Alfred E. Jurist and Walter G. Christiansen.
   "Apparatus for the Determination of Volatile Oils," Joseph F. Clevenger.
   "Epsom Salt of To-day," Edward S. Rose.
   "A Method for the Quantitative Estimation of Sulphur Combined and as Sulphides in Potassa Sulphurata (Liver of Sulphur)," Charles V. Netz.
   "The Assay of Ephedra Vulgaris," J. B. Williams.
   "The Assay of Phosphoric Acid," F. A. Maurina.
   "Direction and Colorimetric Determination of Traces of Aluminum," I. M. Kolthoff.
   "The Polarimetric and Dilution Methods for Estimation of Oil in Lemon Extract: A Comparison of Their Accuracy and the Effect of Temperature," Charles V. Netz.

FRIDAY, 2:00 P.M.—*Third Session.*

7. *Organic Chemistry.*
   "The Effect of Various Compounds on the Rate of Development of Rancidity in Fats and Oils," Wm. J. Husa and Lydia M. Husa.
   "New Esters of *p*-Methoxy Cinnamic Acid," P. A. Foote and Edward Kremers.
   "Dimethylphthalate and Other Phthalates," J. A. Handy and L. F. Hoyt.
   "Polymerization of Olefines," R. Van Winkle.
   "The Determination of Sugar, Uric Acid, Urea and Creatinine in One Cubic Centimeter of Blood," Edward S. Rose.
   "A Discussion of the Pharmacopœial Specifications for Cresol," H. Ohaver.
   "Gold Compounds for Medicinal Use," F. R. Greenbaum.
   "Pharmaceutical Products from Mucic Acid," J. L. Powers and F. F. Blicke.
8. *Physical Chemistry.*
   "A Century of the U. S. P. 1820–1920: Chalk and Other Forms of $CaCO_3$," B. V. Christensen and Edward Kremers.
   "The Constants of Chloroform Liniment," L. E. Warren.
   "The Optical Identification of Alkaloids," George L. Keenan.
   "Plasticity Measurements on Milk of Magnesia," S. Arzoomonian.
   "Changes in the Silver-Ion Concentration of Stored Solutions of Colloidal Silver Germicides," R. B. Smith.
   "p_H Determinations in Alcohol Solutions and Values Obtained for Certain Tinctures," R. B. Smith.
   "Preparation of Reversible Colloids," W. A. Lott.
   "The Causes of Precipitation in Tinctures and Fluidextracts," Wilbur L. Scoville.
9. *Botany and Pharmacognosy.*
   "Medicinal Plants of Florida," Ernst T. Stuhr.
   "A Recent Adulterant for Viburnum Prunifolium," Heber W. Youngken.
10. Nomination of Officers.
11. Reports of Committees.
12. Unfinished Business.
13. Election and Installation of Officers.
14. New Business.
15. Adjournment.

SECTION ON EDUCATION AND LEGISLATION.

The first session of the Section on Education and Legislation will be held in Room D, the second in Rooms B and C.

Officers: *Chairman*, H. M. FASER; *Secretary*, M. N. FORD; *Delegate to the House of Delegates*, A. L. I. WINNE.

PROGRAM.

1. Chairman's Address, H. M. Faser.
2. Secretary's Report, M. N. Ford.
3. Appointment of Committees.

Papers.

   "The Four-Year Curriculum," Frederick J. Wulling.
   "The Basis for Agreement for a Standard Three-Year Curriculum," W. J. Husa.
   "The Pharmacist and the Narcotic Evil," A. R. Bliss.
   "Too Many Drug Stores," Wortley F. Rudd.
   "Some Experiences with the Four-Year Course," Clair A. Dye.
   "Some Problems Met by Board of Pharmacy Members in Securing Legislation," John Culley.
   "Leaks in Pharmacy," A. L. I. Winne.
   "Quiz Methods in Pharmacy," C. O. Lee.

4. Reports of Committees.
5. Unfinished Business.
6. Election of Officers.
7. Adjournment.

Papers Will Be Arranged for the Two Sessions by the Officers.

SECTION ON PRACTICAL PHARMACY AND DISPENSING.

(Pharmacopœias, Formularies and Standards.)

The room for the first session of the Section is to be selected, the Joint Session will be held in Bradley Hall, and the final session in the French Room.

Officers: *Chairman*, ADLEY B. NICHOLS; *First Vice-Chairman*, FITZGERALD DUNNING; *Second Vice-Chairman*, R. E. TERRY; *Secretary*, C. V. NETZ; *Delegate to the House of Delegates*, C. M. SNOW.

Sessions: Thursday, August 25, 9:00 A.M.; Joint Session, Thursday, August 25, 7:30 P.M.; Final Session, Friday, August 26, 2:00 P.M.

PROGRAM.

1. Chairman's Address, Adley B. Nichols.
2. Secretary's Report, Charles V. Netz.

3. General Business.

Papers.

"Facts Regarding the Manufacture, Physical Constants and Keeping Qualities of Soap, Chloroform and Camphor Liniments of the U. S. P.," Samuel Shkolnik.

A Color Standard for Tincture of Cudbear," L. F. Gabel.

'Biologicals Viewed as Pharmaceuticals," J. C. Peacock.

"Some Prescription Problems," H. C. Newton.

"National Formulary Propaganda and Some Prescription Problems," Peter J. Kolb.

"An Arzney Holbuch," Edward Kremers.

"The Practical Training Necessary for a Professional Dispensing Pharmacist," P. H. Dirstine.

"The Effect of Changes of Hydrogen-Ion Concentration upon Compound Tincture of Gentian," J. C. Krantz, Jr., and Frank J. Slama.

"A Symposium on Substances Prescribed by Physicians," E. Fullerton Cook.

"The Quality of Compressed Tablets, Particularly as to Solubility and Ease of Disintegration," Wm. J. Husa.

"The Importance of the Individual in Practical Pharmacy," W. C. Baines.

4. Appointment of Committees.

Joint Session Scientific Section and Section on Practical Pharmacy and Dispensing.—See under Joint Session Scientific Section.

FRIDAY, AUGUST 26, 2:00 P.M.—*Second Session.*

Papers.

"Medical Uses of Gelatin," Andrew M. Neff and George D. Beal.

"A Prescription Incompatibility That Has Become a Classic," Edward Kremers.

"The Diamond Opportunity for Pharmacists," Robert J. Ruth.

"What I Know about Making Ointments," Fred H. Swift.

"Spirit of Ethyl Nitrite," Wm. G. Hall.

"A Pharmacist in Europe," E. Fullerton Cook.

"Syrup of Ferrous Iodide and Syrup of Hydriodic Acid," H. V. Arny.

"Progress in our Procedure in Prescription Pricing," Leonard J. Seltzer.

"Ethics or Commerce in Pharmacy," Leo G. Penn.

"Prescription Clinic," Adley B. Nichols.

5. Unfinished Business.
6. Report of Nominating Committee.
7. Election and Installation of Officers.
8. Adjournment.

Order of program subject to change.

SECTION ON COMMERCIAL INTERESTS.

All sessions of the Section on Commerical Interests will be held in Room D.

Officers: *Chairman*, BERNARD M. KEENE; *Secretary*, C. LEONARD O'CONNELL; *Delegate to the House of Delegates*, AMBROSE HUNSBERGER.

Sessions: Wednesday, August 24th, 9:00 A.M.; Friday, August 26th, 9:00 A.M.

PROGRAM.

WEDNESDAY, AUGUST 24th, 9:00 A.M.—*First Session.*

1. Chairman's Address, J. Bernard M. Keene.
2. Report of Secretary, C. Leonard O'Connell.
3. Appointment of Committees.
4. Report of Committees.
5. General Business.
6. "Financial Support Needed for the Commercial Departments of the Colleges of Pharmacy," C. B. Jordan.
7. "Chain Store Evil," F. H. Freericks.
8. "A College Course in Drug Store Display," E. H. Niles.
9. "Meeting the Competition," S. S. Dworkin.
10. "Increasing Net Profit by Increasing the Average Sale," W. Bruce Philip.
11. "What the Doctor Expects from the Druggist," Denny Brann.
12. "What Is Your Name Worth," R. P. Fischelis.

Impromptu Speech on Druggists' Research Bureau, E. L. Newcomb.

FRIDAY, AUGUST 26, 9:00 A.M.—*Second Session.*

1. "Necessity for Teaching Commerical Pharmacy in our Colleges of Pharmacy," W. F. Rudd.
2. "Optimism in Pharmacy," Robert J. Ruth.
3. "Development of a Commercial Course in Pharmacy," Anton Hogstad, Jr.
4. "Retail Drug Store Advertising," W. H. Lamont.

5. "How to Build up the Most Profitable 'Side Line' in a Pharmacy—The Prescription Department," Jacob Diner.
6. "Old Ideas in a New Light," Paul Strahl.
7. "Title to be supplied," A. L. I. Winne.
8. "Some Observations of Present Day Retrail Pharmacy," Edward S. Rose.
9. Unfinished Business.
10. Report of Delegate, Ambrose Hunsberger.
11. Election.
12. Installation of Officers.

Adjournment.

SECTION ON HISTORICAL PHARMACY.

All sessions of the Section on Historical Pharmacy will be held in Rooms B and C.

Officers: *Chairman*, W. F. SUDRO; *Secretary*, E. J. KENNEDY; *Delegate to the House of Delegates*, C. J. GIETNER; *Historian*, E. G. EBERLE.

Sessions: Thursday, August 25th, 9:00 A.M.; Thursday, August 25th, 7:30 P.M.

PROGRAM.

1. Chairman's Address, W. F. Sudro.
2. Secretary's Report, E. J. Kennedy.
3. Historian's Report, E. G. Eberle.
4. Appointment of Committees.

Papers.

Editor's Report of Progress, History of American Pharmacy, Clyde L. Eddy.

Co-Authors' Reports.

"The Life and Character of Henry Milton Whelpley," James H. Beal.

"The Influence of Henry Milton Whelpley in the Formation of the National Association of Boards of Pharmacy," H. C. Christensen.

"What Are Galenicals?" Charles H. LaWall.

"History of Cascara Industry," Thurman J. Starker.

"History of the Mint Industry," C. C. Glover.

"High Points in the History of the American Pharmaceutical Manufacturers' Association," B. L. Maltbie.

"Dr. William Brown, Father of the First Pharmacopœia, in America," Lyman F. Kebler.

"Humboldt's Travels in South America"—continued, Edward Kremers.

"The Apothecary in Literature"—continued, Edward Kremers.

"An Arzney Holbuch," Edward Kremers.

5. Report of Committees.
6. Election of Officers.

Papers.

"The Doctrine of Signatures," Leo Suppan.

"Schieffelin & Co. The Oldest Wholesale Drug House in New York City," Otto Raubenheimer.

"Gesellschaft fuer Geschichte der Pharmacie," Otto Raubenheimer.

"State Association Proceedings Should Become More Extensive and Authentic Sources of Historical Information," Frederick J. Wulling.

"The Apothecary of the Georgian Period and of To-day—Why the Lowered Estimate," Joseph Jacobs.

"All Things Come to Those Who Wait," John Uri Lloyd.

"Sponge, Its History in Medicine Together with a Brief Account of Its Habits and Structure," John T. Lloyd.

The two former St. Louis A. PH. A. meetings, E. G. Eberle.

Discussion of Headquarters' Museum and Library.

Further Discussion of the History of American Pharmacy.

7. Adjournment.

PLANT SCIENCE SEMINAR.

The Headquarters of the Plant Science Seminar will be at the Coronado Hotel—August 16–19, 1927.

Officers: *Founder*, E. L. NEWCOMB; *Chairman*, E. N. GATHERCOAL; *Secretary*, O. P. M. CANIS.

The sessions of the Seminar will be held at the Missouri Botanical Gardens in the lecture room, laboratories or plant houses. Friday will be spent at Gray's Summit, a 1500-acre wild tract with an especially rich flora. The famous orchid collection of the Gardens is located here.

Laboratory demonstrations: "Quantitative Evaluation of Organic Powders," Dr. G. L. Keenan; "Survey of Our Native Drug Resources," Dr. W. W. Stockberger; "Report on Histological Nomenclature," Professors E. L. Newcomb, A. Schneider, H. W. Youngken, E. H. Wirth, E. N. Gathercoal.

New German Pharmacopœia compared with U. S. P. X, Prof. E. H. Wirth.

"Pharmacology and Plant Physiology," Prof. A. H. Clark, Dr. H. C. McGuigan, Dr. E. H. Vollweiler.

"Round Table on Teaching of Pharmacognosy," led by Dr. A. Hogstad. Botanical Excursions, led by Dr. H. H. Rusby, Dr. A. Viehoever and Dean W. B. Day.

Prof. Charles C. Plitt, Baltimore, and Dr. La Garde, bio-chemist of Prague, will present papers.

An informal dinner and soiree in conjunction with the Naturalists' Club of St. Louis on Thursday evening at the Coronado Hotel will be the principal social feature.

NATIONAL CONFERENCE ON PHARMACEUTICAL RESEARCH.

RESEARCH INFORMATION.

The sixth annual meeting of the National Conference on Pharmaceutical Research will be held at Hotel Coronado, St. Louis, Mo., on Saturday, August 20, 1927.

Officers: *Chairman*, H. V. ARNY; *Vice-Chairman*, J. H. WEBSTER; *Secretary*, JOHN C. KRANTZ, JR.

There will be two sessions of the Conference; one beginning at 9:30 A.M., and the other at 2:00 P.M.

The tentative program is as follows:

1. Roll Call.
2. Reports of Officers.
3. Reports of the ten standing committees.
4. Report of special committee on color standards.
5. Report of special committee on book of research achievements.
6. Reports from delegates from the affiliated organizations, *viz:*
   - (*a*) Association of Official Agricultural Chemists.
   - (*b*) American Association of Colleges of Pharmacy.
   - (*c*) American Chemical Society Division of Chemistry of Medicinal Products.
   - (*d*) American Drug Manufacturers' Association.
   - (*e*) AMERICAN PHARMACEUTICAL ASSOCIATION.
   - (*f*) American Pharmaceutical Manufacturers' Association.
   - (*g*) Bureau of Chemistry, U. S. Department of Agriculture.
   - (*h*) Hygienic Laboratory, U. S. Public Health Service.
   - (*i*) National Association of Boards of Pharmacy.
   - (*j*) National Association of Retail Druggists.
   - (*k*) National Formulary Revision Committee.
   - (*l*) National Wholesale Druggists' Association.
   - (*m*) Pharmaceutical Laboratory Seminar.
   - (*n*) Plant Science Seminar.
   - (*o*) Proprietary Association.
   - (*p*) U. S. P. Revision Committee.
7. General discussion on:
   - (*a*) Census of Research.
   - (*b*) Graduate students in pharmacy and their research work.
   - (*c*) Research grants and prizes.
   - (*d*) Research fellowships and scholarships.
8. New Business.
9. Election.
10. Adjournment.

THE AMERICAN ASSOCIATION OF COLLEGES OF PHARMACY.

TWENTY-EIGHTH ANNUAL MEETING.

Meeting Executive Committee, Room A. Teachers' Conferences in Rooms B, C and D. First Session and Joint Session in Bradley Hall; other sessions in French Room.

Officers: *President*, D. B. R. JOHNSON; *Vice-President*, A. G. DUMEZ; *Secretary-Treasurer*, ZADA M. COOPER; *Chairman of the Executive Committee*, CHARLES B. JORDAN.

Sessions: Monday, 9:00 A.M., 2:30 and 8:00 P.M.; Tuesday; Joint Session with N. A. B. P. at 10:00 A.M., and 2:30 P.M. For program see July JOURNAL, A. PH. A., p. 700.

NATIONAL ASSOCIATION OF BOARDS OF PHARMACY.

TWENTY-FOURTH ANNUAL CONVENTION AT CORONADO HOTEL, ST. LOUIS, AUGUST 22 AND 23, 1927.

Officers: *President*, WILFORD HARRISON; *Secretary*, H. C. CHRISTENSEN.

All meetings of the National Association of Boards of Pharmacy will be held in the Green Room. The Joint Session with the American Association of Colleges of Pharmacy will be held in Bradley Hall. For program see the Department N. A. B. P.—in this issue of the JOURNAL.

ENTERTAINMENT PROGRAM.

MONDAY, AUGUST 22ND.

2:00 P.M. Base Ball Game. Sportsman's Park. For Ladies Only.

8:00 P.M. Musicale. For Ladies Only. *Bradley Hall.*

TUESDAY, AUGUST 23RD.

2:30 P.M. Theatre Party. For Ladies.
6:30 P.M. Testimonial Dinner. *Bradley Hall.*
Dinner Dance. *Green Room.*

WEDNESDAY, AUGUST 24TH.

2:00 P.M. Card Party. For Ladies Only. *Green Room.*
8:00 P.M. Opera for All Registered.

THURSDAY, AUGUST 25TH.

12:00 M. Veterans' Luncheon. Men. *Green Room.*
2:30 P.M. Auto Trip around St. Louis. For Ladies Only.
8:00 P.M. Theatre Party. For Ladies Only.

FRIDAY, AUGUST 26TH.

12:00 M. Luncheon and Smoker. Men. *Bradley Hall.*
2:30 P.M. Card Party. For Ladies. *Bradley Hall.*

SATURDAY, AUGUST 27TH.

9:00 A.M. Trip to the Zoo and Botanical Gardens.
12:00 M. Picnic Box Luncheon at the Missouri Botanical Gardens.

Arrangements for Fraternity and Alumni Luncheons will probably be arranged by respective organizations.

OFFICERS OF STATE PHARMACEUTICAL ASSOCIATIONS, 1927–1928.

(*Continued from July issue.*)

Secretaries of Associations are respectfully asked to make corrections, and send in lists of officers and names of next convention cities to the JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION, 10 W. Chase St., Baltimore, Md.

List to be continued.

FLORIDA.

Lawrie J. Taylor was elected full-time Secretary of Florida Pharmaceutical Association. The State is to be divided into ten districts; unit members pay $12.00 annually. The National Drug Research Bureau was endorsed. President Atwood reviewed the Association work. Professor Husa presided over the Scientific Section. Among the speakers of the convention were Samuel C. Davis, W. N. Davison, of Miami Chamber of Commerce, and D. L. Simmons, President of Florida Medical Society.

The following officers were elected for the ensuing year:

President, I. Cliff Smith, Miami.

First Vice-President, William Emrich, Orlando.

Second Vice-President, E. L. Bridges, Jacksonville.

Third Vice-President, George Moore, Clearwater.

Secretary-Treasurer, Lawrie J. Taylor, Box 816, Eustis, Fla.

Ocala was selected for next year's convention.

LOUISIANA.

In deference to flood conditions throughout the State no entertainments were provided for the 45th annual convention of Louisiana Pharmaceutical Association. Only one day's session was arranged for; the following officers were elected for the ensuing year:

President, Sidney J. Peters, New Orleans.

First Vice-President, Donald K. Mayer, Winnsboro.

Second Vice-President, Paul C. Weilbaecher, New Orleans.

Treasurer, Adam Wirth, New Orleans.

Secretary, G. W. McDuff, New Orleans.

Corresponding Secretary, Mrs. M. Stolzenthaler, New Orleans.

MISSISSIPPI.

Mississippi Pharmaceutical Association was organized in 1883 and incorporated in 1893. President Mathis urged that pharmacists have larger representation in the State Legislature. Among the speakers of the convention were Secretary E. F. Kelly, W. A. Oren, Carl Weeks and W. E. Bingham. Two banquets were given, one presided over by Gus. C. Kendall as toastmaster and the other by Dean Faser. The following officers were elected for the ensuing year:

President, J. W. Holt, Meridian.

First Vice-President, Richard Taylor, Seminary.

Second Vice-President, Miss Adele Stigler, Yazoo City.

Secretary-Treasurer, A. S. Coody, Jackson.

State Organizer, C. E. Anding, Flora.

MONTANA.

Montana pharmacists desire that the Government take over the dispensing of medicinal alcoholic liquids. Ownership laws were discussed. E. S. Sater, of the A. PH. A.,

was one of the speakers of the convention. Charles Chapple, Dean C. E. Mollette and J. A. Reidel were elected delegates to the A. PH. A. convention.

The following officers were elected:

President, M. D. Chatfield, Helena.

First Vice-President, Charles Sande, Laurel.

Second Vice-President, Albert Johnson, Glendive.

Third Vice-President, James Vicars, Livingston.

Treasurer, Mae C. Higgins, Manhattan.

Secretary, J. A. Reidel, Boulder.

The next annual meeting will be held at Yellowstone.

NEW HAMPSHIRE.

Among the speakers at the New Hampshire State Association were Harry Noel, J. F. Finneran, C. Fred Wright and H. J. Henry.

The following officers were elected for the ensuing year:

President, Rodney A. Griffin, Franklin.

First Vice-President, Archie F. Precourt, Manchester.

Second Vice-President, A. L. Davis, Keene.

Secretary, D. Leo Hallisey, Nashville.

Treasurer, Edgar Gowlet, Manchester.

NEW JERSEY.

Among the high spots of the convention was the address of Governor Moore, being the first time in many years since a Governor honored the Association by attendance. President Strehl spoke in high terms of the services of Secretary Fischelis, who had filled the unexpired term of the late Secretary Jeannot Hostmann. The following officers were elected for the ensuing year:

President, Fred Warnke, Jersey City.

First Vice-President, Thomas F. Maroney, Bayonne.

Second Vice-President, Leo M. McEvoy, Newark.

Secretary, Robert P. Fischelis, Trenton.

Treasurer, Charles J. McCloskey, Jersey City.

Local Secretary, Hugo Krause, Atlantic City.

The next annual meeting will be held at Atlantic City.

President Strehl said the newly created Committee on Pharmaceutical Education and Standards had justified its existence and referred to a conference of the Association, the Board of Pharmacy and New Jersey College faculty as an evidence of coöperation. A code of ethics presented by Chairman McCloskey was unanimously adopted. Provision has been made for the publication of a bulletin until the monthly journal is arranged for. L. L. Walton and George W. Parisen were elected honorary members.

Dr. E. L. Newcomb was one of the speakers of the convention and the Druggists' Research Bureau was endorsed. A number of interesting and valuable papers were read and discussed.

NEW YORK.

Among the discussions at the 49th meeting of New York State Pharmaceutical Association, were chain-store competition and price maintenance. Support was pledged to the New York Conference in the action recently brought against it. President Diekman reviewed the year's work and gave considerable attention to changes in the pharmacy curricula. The following officers were elected for the ensuing year:

President, Walter B. Tongue, Poughkeepsie.

First Vice-President, Pincus Herz, Mount Vernon.

Second Vice-President, George F. Bigham, Buffalo.

Third Vice-President, Nicholas S. Gesoalde, Brooklyn.

Secretary, Edward S. Dawson, Syracuse.

Treasurer, Richard A. Austin, Cairo.

The next annual meeting will be held at Saratoga Springs.

Chairman Robert S. Lehman presided during the reading of papers. A paper by Prof. A. B. Lemon on "The Inferior Student in Pharmacy" was awarded first prize. The report of the Committee on U. S. P. was made by Joseph L. Mayer.

NORTH CAROLINA.

The sessions of North Carolina Pharmaceutical Association were held at O'Henry Hotel in Greensboro. It is quite generally known that "O'Henry" was engaged in his uncle's drug store for a number of years; he also was employed in Morley Brothers drug store at Austin, Texas, for a time. Among the speakers of the convention were Dr. E. L. Newcomb, Carl Weeks, R. D. Keim, Dr. H. C. Fuller, Hon. O. Max Gardner. President Eubanks laid particular stress in his legislative review on the drug store registration bill. The following officers were elected for the ensuing year:

President, R. R. Copeland, Ahoskie.

First Vice-President, Polk C. Gray, Statesville.

Second Vice-President, C. C. Fordham, Sr., Greensboro.

Third Vice-President, R. K. Blair, Charlotte.

Secretary-Treasurer, J. G. Beard, Chapel Hill.

Assistant Secretary-Treasurer, C. M. Andrews, Burlington.

Local Secretary, Walter Hufham, Morehead City.

Morehead City was selected as the convention city for 1928.

PENNSYLVANIA.

The 50th meeting of Pennsylvania Pharmaceutical Association showed a registration of nearly 300. The address of President England was comprehensive and adapted to a semicentennial celebration—a review of the events of the past year and a survey of the history and times of the Association's eventful years. The following are the officers for the ensuing year:

President, Wilbur B. Goodyear, Harrisburg.

First Vice-President, Scott Paisley, New Castle.

Second Vice-President, E. T. Hahn, Philadelphia.

Secretary and Treasurer, J. G. Noh, Harrisburg.

The next annual meeting will be held at Buena Vista, Pa.

President England briefly told of the development of the manufacture of biologicals and referred to the following as among the more important contributions of pharmacy to science:

Squibb's work on percolation; Diehl's on percolation; Maisch's on pharmacognosy; Power's on phytochemistry; Kremer's on volatile oils; Rusby's on drug plant explorations; Lloyd's on adsorption and other colloidal phenomena; Schlotterbeck's on alkaloids; Kraemer's on powdered drugs; Newcomb's on drug plant cultivation.

The work of Secretary Noh has been eminently satisfactory. Many interesting papers and reports were presented. Among the speakers were Ambrose Hunsberger, Dr. Wilmer Krusen, S. L. Hilton, Robert P. Fischelis.

SOUTH CAROLINA.

President J. H. Frierson in his address stressed service in behalf of pharmacy and of pharmacy for the public. He presented the association with a gavel. The following officers were elected for the ensuing year:

President, M. S. Dantzler, Elloree.

First Vice-President, I. A. Rigby, Spartanburg.

Second Vice-President, A. C. Ellerbe, Florence.

Secretary-Treasurer, Frank M. Smith, Charleston.

TEXAS.

The fact that membership in Texas Pharmaceutical Association is part of licenseship in Texas adds numerical strength to this organization. Probably 2500 attended the meeting in the "Alamo City." The address of President Rike gave credit for splendid work by officials of the Association. He reviewed the undertakings of the organization and dwelt upon the coöperative efforts and urged that all members aid in seeing that the law relating to dispensing of alcoholics be strictly complied with. The drug show was an interesting part of the convention. Few secretaries have achieved more in behalf of organization work than Secretary Adams. The membership of the Texas Association is about 3500. The officers for the ensuing year are:

President, E. C. Phillips, Big Spring.

First Vice-President, Knox Pittard, Anson.

Second Vice-President, Henry F. Hein, San Antonio.

Secretary-Treasurer, Walter D. Adams, Forney.

Among the speakers of the convention were, Samuel C. Davis of the N. A. R. D. and E. G. Eberle of the A. PH. A.

UTAH.

President Carr reviewed Association activities; he did not favor the higher educational requirements for all engaged in the drug business. The following were elected officers for the ensuing year:

President, Jacob Johnston, Salt Lake City.

First Vice-President, Charles Watson, Midvale.

Second Vice-President, June W. Clark, Ogden.

Treasurer, Walter Hedquist, Provo.

Secretary, John Culley, Ogden.

The next annual meeting will be held at Provo.

Among the speakers of the convention were Hugh O'Connor, of *Pacific Drug Review*, Prof. H. L. Thompson, Glenn Maddox, Charles Van Dyke. President Carr called attention to the

code of ethics of the AMERICAN PHARMACEUTICAL ASSOCIATION as a guide for pharmacists. Price maintenance was endorsed.

VERMONT.

President Bradley addressed Vermont Pharmaceutical Association. There were also present from Boston, Prof. E. H. La Pierre, Prof. Thompson, Prof. Amrhein, James Finneran and others. The following were elected as officers for the ensuing year:

President, W. H. Saunders, Lydonville.

First Vice-President, Charles J. Flood, Poultney.

Second Vice-President, George C. Ross, Vergennes.

Third Vice-President, Gerald Grady, Enosburg Falls.

Secretary and Treasurer, F. W. Churchill, Proctor.

VIRGINIA.

Among the speakers at Virginia Pharmaceutical Association were, Dr. Stuart McGuire, and Jerry McQuade of *Drug Topics*. Price maintenance was endorsed. The following are the officers for the ensuing year:

President, W. E. Locke, Richmond.

First Vice-President, C. R. Claiborne, Lynchburg.

Second Vice-President, H. R. Cecil, Dublin.

Third Vice-President, H. S. Falconer, Newport News.

Fourth Vice-President, G. E. Heller, Bedford.

Fifth Vice-President, C. W. Powers, Roanoke.

Sixth Vice-President, J. W. Williamson, Harrisonburg.

Secretary-Treasurer, A. L. I. Winne, Richmond.

The next annual meeting will be held at Roanoke, June 1928.

WEST VIRGINIA.

The following were elected officers of West Virginia Pharmaceutical Association for the ensuing year:

President, E. V. Romig, Keyser.

First Vice-President, S. Monroe Bledsoe, Beckley.

Second Vice-President, H. C. Feuller, Wheeling.

Third Vice-President, L. Harper Rogers, Clarksburg.

Secretary-Treasurer, J. Lester Hayman, Morgantown.

Among the speakers of the convention were Dr. James H. Beal and E. F. Kelly.

The next annual meeting will be held at White Sulphur Springs, in June 1928.

WISCONSIN.

The following were elected officers of Wisconsin Pharmaceutical Association for the ensuing year:

President, Otto E. Rydell, Superior.

First Vice-President, Edwin Boberg, Eau Clair.

Second Vice-President, T. Biedermann, Milwaukee.

Third Vice-President, C. Andrae, Adams.

Secretary, E. B. Heimstreet, Lake Mills.

Treasurer, R. Rollman, Chilton.

The next annual meeting will be held at Green Lake in June 1928.

ONTARIO.

President E. D. Bonnell congratulated the druggists of Canada on the progress of price-maintenance movement and activities of the P. A. T. A. Among the speakers of the convention were Sir William S. Glyn-Jones and E. C. Brokmeyer. The following officers were elected for the ensuing year:

President, H. H. Tapscott, Brantford.

Honorary President, C. E. Whebby, Toronto.

First Vice-President, A. J. Wilkinson, Windsor.

Second Vice-President, L. F. Best, Kingston.

Next year's convention will be held at London.

RHO CHI, NATIONAL HONORARY PHARMACEUTICAL SOCIETY.

BY ZADA M. COOPER.

Rho Chi, national honorary pharmaceutical society, is making satisfactory progress and a name for itself. Above all, it is proving an encouragement to scholarship.

The officers of the grand chapter are: *President*, E. J. Traut, Battle Creek, Mich.; *Vice-President*, F. D. Wood, Morgantown, West Virginia; *Secretary*, Clifford C. Glover, Ann Arbor, Mich.; *Treasurer*, J. L. Powers, Corvallis, Oregon.

The chapters are located as follows:

Alpha, University of Michigan, Ann Arbor
Beta, Ore. Agricultural College, Corvallis
Gamma, University of Oklahoma, Norman
Delta, State Univ. of Iowa, Iowa City
Epsilon, State Coll. of Washington, Pullman

Zeta, Ala. Polytechnic Institute, Auburn
Eta, Univ. of Wisconsin, Madison
Theta, Univ. of Southern Calif., Los Angeles.

Freshman students are having Rho Chi brought to their attention early in their college career. More than that, prizes are being offered to freshmen for superior scholarship, because it is recognized that chances for ever attaining membership in the society are slim if students do not begin to work at first. Besides giving the necessary grades, they are laying the foundation for subsequent good work. Alpha chapter gives a prize of ten dollars to the freshman making the highest grade in a competitive examination held the latter part of the school year. Epsilon chapter gives a ten-dollar prize to the freshman student making the highest average. This year Miss Schellenberger and Mr. Darst tied for the honor. Delta chapter gives twenty dollars to the freshman student ranking highest, all first-year subjects being considered. Theta chapter offers a perpetual silver cup to be awarded to the freshman student maintaining the highest average for the year. It also offers a trophy to be awarded to the sophomore student elected to Rho Chi who maintains a high scholastic standing and who has the interests of pharmacy at heart, professionally and socially.

Some news from the various chapters has been reported lately. Theta chapter has elected several this year. Mrs. Anna Wager, Harold Eipley and Lloyd Brown, graduate students; Margaret Airston, assistant professor of pharmaceutical chemistry, Frank Richardson, instructor in pharmacy and George Fiero, instructor in materia medica, were elected to active membership. Dr. Laird J. Stabler, Dean of the College and Professor of Chemistry and Arthur R. Maas, Professor of Pharmacy, were made honorary members. Officers of the chapter are: *President*, A. G. Hall; *Vice-President*, Ray Pinker; *Secretary*, Mrs. Fitzgerald; *Treasurer*, Willard Smith.

Eta chapter at the University of Wisconsin elected ten students in the fall. Members of the State Board were made honorary members of the chapter. Officers are: *President*, P. A. Foote; *Vice-President*, E. G. Kuenze; *Secretary-Treasurer*, A. H. Uhl; *Councillor*, B. V. Christenson.

Delta chapter has added only two members this year, because in this period of transition from a two-year minimum course to a three-year minimum, very few have completed the necessary number of hours. The two elected were: Ralph W. Lewis, of Albany, Ill. who will receive his B.S. degree in June, and M. Virginia Light, Des Moines, who is a junior in the four-year course.

Epsilon chapter, for the first time, elected three women this year: Miss Belle Wenz, an instructor in pharmacy, and Miss Haines and Miss Fengas, students. Officers of the chapter are: *President*, Haakon Bang, and *Secretary-Treasurer*, Mr. Weatherman.

SCIENCE PAPERS OF THE BRITISH PHARMACEUTICAL CONFERENCE.

Subjoined is a list of the papers communicated to the Science Sessions of the Conference at Brighton, England, on June 21st and 22nd:

"The Therapeutic Value of the Uultra-Violet Rays," by L. A. Parry, M.D., B.S., F.R.C.S.

"Solution of Ammonium Acetate, B. P.," by Noel L. Allport and T. Tusting Cocking, F.I.C.

"A Colour Test for Ergot Alkaloids," by Norman Evers, B.Sc., F.I.C.

"The Volumetric Assay of Iodides," by A. J. Jones, Ph.C., A.I.C.

"High Density Syrup for Pharmaceutical Use," by W. A. Whatmough, B.Sc., F.I.C., Ph.C.

"The Estimation of Cineole," by T. Tusting Cocking, F.I.C.

"The Plastic Behaviour of Tragacanth Mucilage and Its Pharmaceutical Significance," by G. Middleton, B.Sc., A.I.C.

"A Short Note on Catechu Palladium," by C. J. Jordan, M.P.S.

"A Note on Iron and Ammonium Citrate, B. P.," by F. J. Todd, Ph.C.

"The Official Preparations of Cinchona Bark," by F. J. Todd, Ph.C.

"Sulphur Sublimatum," by C. Olive Griffiths, Burroughs Scholar.

"Stramonium and Other Species of Datura: A Comparative Study of their Leaves," by Helen A. Timmerman, B.Sc.

"Tragacanth and Its Mucilage.—II," by Norman Evers, B.Sc., F.I.C., and Thomas McLachlan, F.I.C.

"Note on the Identification and Determination of Morphine in Compound Tincture of Camphor," by Charles M. Caines, F.I.C.

"Spiritus Aetheris and Spiritus Chloroformi: The Variation of the Specific Gravity with the

Proportions of the Ingredients," by F. H. Milner.

"Carbolic Acid Suppositories, B. P., 1914," by Harry Brindle, B.Sc. (Lond.), A.I.C., Ph.C., and L. H. Boardman, Ph.C.

"A New Method of Locating the End-Point in Alkaloidal Titrations," by C. Morton, B.Sc., Ph.C.

"The Detection and Estimation of Vitamin A and of Vitamin D in Cod-Liver Oil and Various Food Products," by Frank W. Wokes, B.Sc., F. I.C., Ph.C., and Stanley G. Willimott, Ph.D., B.Sc., A.I.C.

"Some Constituents of Citrus Fruits," by Stanley G. Willimott, Ph.D., B.Sc., A.I.C., and Frank Wokes, B.Sc., F.I.C., Ph.C.

"The Use of Certain Carbohydrates and Glucosides in the Differentiation of Members of the Almonella Group of Food-Poisoning Bacilli," by Frank W. Wokes, B.Sc., F.I.C., Ph.C. and Joseph H. Irwin, B.Sc.

"Some Less Appreciated Constituents of Orange Juice," by Stanley G. Willimott, Ph.D., B.Sc., A.I.C.

"A Supplementary Paper on Official Astringent Drugs," by Alan H. Ware, Ph.C.

"The Detection of Carbolic Acid in Commercial Cresols," by Alan H. Ware, Ph.C.

"The Extractive of Ginger," by J. R. Walmsley, Ph.C., F.I.C., F.C.S., A.M.S.T.

"The Detection of Chlorides in Mercuric Oxide," by G. J. W. Ferrey, B.Sc., A.I.C.

"Tea Seed Oil and Its Use as an Adulterant of Olive Oil," by H. A. Caulkin, B.Sc. (Lond.), F.I.C.

"A Note on Antimony Trichloride and Some Factors Affecting Its Sensitivity as a Reagent for Vitamin A," by Frank Wokes, B.Sc., F.I.C.

THE PHARMACIST AND THE LAW.

LIABILITY FROM DRUG SENT ON TELEPHONE PRESCRIPTION.

(Twombly *v.* Piette (Vt.), 134 Atl. R 700.)

The Supreme Court of Vermont, in affirming a judgment for the plaintiff without stating the amount of the judgment, says that her evidence tended to show that her mother telephoned to the defendant physician telling him that the plaintiff had had mosquito bites on her head and had accidentally combed through them, so that they were causing her trouble with keeping her hair in curl, and that water came from them, and asking him if he could send something to put on to heal and stop them, in answer to which he said that he could, and would send a white powder to be put on those places. The powder was received and applied, and so burned the plaintiff's head that her mother telephoned to the defendant that her daughter could hardly bear it. The powder sent by the pharmacist, under the defendant's direction, was mercuric chloride. The defendant testified that, deciding from the description given him that the trouble was not mosquito bites, but impetigo, he called up the pharmacy by telephone and asked the pharmacist if he would send to the plaintiff's mother "1 ounce of mild chloride of mercury," to which the pharmacist answered yes; that the next thing that he knew about the matter was when he received word that the medicine burned the plaintiff's scalp, and he suggested that she be sent to him. The pharmacist testified that he was told by the defendant, over the telephone, to send "1 ounce of bichloride of mercury."

The question whether the defendant ordered the pharmacist to send to the plaintiff's mother "bichloride of mercury" or whether it was "mild chloride of mercury," was submitted to the jury in a manner satisfactory to the defendant, the jury being told in that connection that, if the defendant told the pharmacist to send "mild chloride of mercury," and the pharmacist, through mistake, sent "bichloride of mercury," then the defendant was not responsible for the negligence or fault of the pharmacist, and the verdict must be for the defendant. The court further instructed the jury in effect that, it being conceded on behalf of the defendant that if he prescribed "bichloride of mercury" to be used on the plaintiff's scalp he was guilty of negligence as a physician in directing the pharmacist to send "bichloride of mercury," if he did so direct, this was a prescription of it, and, if that was the proximate cause of the injuries suffered by the plaintiff, she was entitled to recover in this action. Under the foregoing instructions, to which no exception was taken, the jury must have found that the defendant's order to the pharmacist was to send "bichloride of mercury," for it returned a verdict for the plaintiff.

The ruling of the trial court, rightly made this court thinks, without any exception thereto saved, that the defendant's act in calling up the pharmacist and directing him

to send a certain drug to the plaintiff's mother was a prescription of it, established the law of the case in such respect. And it was a prescription by the defendant, a legally qualified practitioner of medicine, to his patient, the plaintiff. It therefore fell within the provisions of section 6284 of the general law of the State that "the provisions of the two preceding sections shall not apply to legally qualified practitioners of medicine or to their prescriptions or recipes to their patients," which sections require a record to be kept, when a sale is made, of the use to be made of the drug purchased. This disposed of the defendant's contention that the law required the pharmacist to ascertain the proposed use of the ordered drug and that if he would not have sent the bichloride of mercury had he ascertained the proposed use of it, then his negligence in sending it without ascertaining the proposed use of it became the immediate and proximate cause of the sending of it and its subsequent injurious application, and the defendant could not be held liable therefor, even assuming that he had prescribed it.

The defendant having testified that when the plaintiff came to his office he saw the mercuric chloride on her head and told her that she had better go right home and wash it out with a large amount of water, it was proper cross-examination to ask him if, had he cared to, he could not have cleaned that condition up immediately; and "You knew that if that remained there any length of time longer, greater absorption would take place?" The latter question was proper on cross-examination to test the defendant's capacity as an expert.

CAUSTIC ACIDS BILL.

From Proceedings A. D. M. A.

Among the other measures which became law is the so-called caustic acid bill, which is to be known as the federal caustic poison act. The bill was sponsored by the American Medical Association and designed chiefly to require the use of poison labels on lye sold for household use. In protesting against this bill we offered no objection to a requirement poison label on lye, but did oppose the sweeping nature of the bill, which applies to a long list of caustic or corrosive acids or alkalies. The bill prohibits the shipment of delivery and shipment in interstate or foreign commerce of any dangerous caustic or corrosive substances suitable for household use in a misbranded parcel, package or container. The term "misbranded" is defined as applying to poisons of the kind mentioned in the measure which do not bear a conspicuous label containing the word poison in legible type. The terms "dangerous," "caustic" or "corrosive" substances are defined to mean and include such acids as hydrochloric acid, sulphuric acid, nitric acid, carbolic acid, oxalic acid, acetic acid, potassium hydroxide, sodium hydroxide, silver nitrate, ammonia water, in various strengths and solutions. Responsibility for the enforcement of the act is placed in the hands of the Secretary of Agriculture. It is understood that the Department of Agriculture is planning on taking in the near future the work of formulating regulations under this measure, and it is possible that the act will not go into effect until some time in 1928, since Congress failed to provide the necessary appropriation for its enforcement. We desire to take this opportunity to urge you to carefully study the provisions of the bill, and any regulations that may be promulgated thereunder, in order that you may fully comply with them.

TAXES ON NARCOTICS UNDER HARRISON ACT DECLARED TO BE VALID.

The imposition of a stamp tax on certain drugs by the Harrison Narcotic Act, Section 1, as amended, which provides that it shall be unlawful to purchase and sell such drugs except in or from original packages, was herein held to be a valid exercise of the power of Congress to lay taxes.

The case came before the Supreme Court of the United States on certificate from the Circuit of Appeals for the 8th Circuit.

Mr. Justice McReynolds delivered the opinion of the court, the full text of which follows:

In the United States District Court, Southern District of Iowa, an indictment with three counts, filed December 2, 1924, charged Alston with violating Section 1, Harrison Narcotic Act, approved December 17, 1924, c. 1, 38 Stat. 785, as amended February 24, 1919, c. 18, 40 Stat. 1057, 1130, 1131, by purchasing morphine and cocaine from unstamped packages. He pleaded "guilty" and was sentenced to the penitentiary.

A writ of error took the cause to the Circuit Court of Appeals 8th Circuit, and it asked our instruction upon certain questions. Thereupon, we required the entire record to be sent

here for final determination of the whole matter. Section 239, Jud. Code.

PROVISIONS ADDED TO ACT.

Sections 1 and 6 of the Harrison Narcotic Act were amended by the Act of February 24, 1919, and, as thus amended, were reënacted without change by Sections 1005 and 1006, Revenue Act approved November 23, 1921, c. 136, 42 Stat. 227, 298, 300. The amending Act added the following provisions (among others) to Section 1:

"That there shall be levied, assessed, collected and paid upon opium, coca leaves, any compound, salt, derivative, or preparation thereof, produced in or imported into the United States, and sold, or removed for consumption or sale, an internal revenue tax at the rate of 1 cent per ounce, and any fraction of an ounce in a package shall be taxed as an ounce, such tax to be paid by the importer, manufacturer, producer, or compounder thereof, and to be represented by appropriate stamps, to be provided by the Commissioner of Internal Revenue with the approval of the Secretary of the Treasury; and the stamps herein provided shall be so affixed to the bottle or other container as to securely seal the stopper, covering or wrapper thereof.

"The tax imposed by this section shall be in addition to any import duty imposed on the aforesaid drugs.

"It shall be unlawful for any person to purchase, sell, dispense, or distribute any of the aforesaid drugs except in the original stamped package or from the original stamped package; and the absence of appropriate tax-paid stamps from any of the aforesaid drugs shall be prima facie evidence of a violation of this section by the person in whose possession same may be found; and the possession of any original stamped package containing any of the aforesaid drugs by any person who has not registered and paid special taxes as required by this section shall be prima facie evidence of liability to such special tax:
Provided ***

PENALTIES ARE PROVIDED.

"Section 9 of the original Harrison Act has remained without change. It provides: "That any person who violates or fails to comply with any of the requirements of this Act shall, on conviction, be fined not more than $2000 or be imprisoned not more than five years, or both, in the discretion of the court."

"The judgment of the trial court is assailed upon two grounds: That Congress has failed to prescribe any punishment for the purchase of drugs from unstamped packages, forbidden by amended Section 1. And, that the entire Act, as amended, is invalid because Congress has undertaken thereby to regulate matters beyond its powers and within exclusive control of the States.

"Section 9, above quoted, obviously applies to the requirements of the amended Act as well as to those found in the original. The first objection has no merit.

"The present cause arises under those provisions of Section 1 which impose a stamp tax on certain drugs and declare it unlawful to purchase or sell them except in or from original stamped packages. These provisions are clearly within the power of Congress to lay taxes and have no necessary connection with any requirement of the Act which may be subject to reasonable disputation. They do not absolutely prohibit buying or selling; have produced substantial revenue; contain nothing to indicate that by colorable use of taxation Congress is attempting to invade the reserved powers of the States. The impositions are not penalties.

"The judgment of the trial court must be affirmed."

CANADIAN FOOD AND DRUGS ACT AMENDMENT RELATING TO DRUGS.

An amendment to the Canadian Food and Drugs Act, passed by the House of Commons on March 25, 1927, and approved by the deputy governor general on April 14th, extends the provisions of the food and drugs act relating to medicines, for internal or external use, to apply to any substance or mixture of substances intended to be used for the treatment, mitigation, or prevention of disease in man or animal. The governor in council may make regulations as follows, respecting any or all of the drugs mentioned in Schedule B. (see below).

Prescribing standards of quality and potency; defining official methods for biological testing, which shall permit manufacturers to have biological tests made in any laboratory; licensing manufacturers preparing drugs mentioned in Parts II and III of Schedule B; inspection of premises and equipment and technical qualifications of the staff of manufacturers preparing such drugs; requiring manufacturers of drugs mentioned in Part IV of Schedule B

to submit test portions of each and every batch of such drugs to be tested in the laboratories of the Department of Health; requiring that only approved batches may be imported, sold, or offered for sale; and prescribing a schedule of fees for inspection, licensing and biological testing.

The amendment also prohibits the distribution from door to door, or in a public place, or through the mails, of samples of any drugs. This provision, however, does not prevent manufacturers or wholesale dealers from distributing samples by mail or otherwise, in compliance with individual requests for same, or from distributing samples to physicians, veterinary surgeons, dentists, registered nurses, hospitals, or to retail druggists for individual redistribution to adults only. (Assistant Trade Commissioner O. B. North, Ottawa.)

BOOK NOTICES AND REVIEWS.

Julius von Wiesner *Die Rohstoffe des Pflanzenreichs.* (The Raw Materials of the Plant Kingdom.) Edited by Paul Krais and William von Brehmer. 4th edition. Volume 1. Alkaloide bis Hefen (Alkaloids to Yeasts). With 307 fig., 1122 pages. Press of Wilhelm Engelmann, Leipzig. 1927. The following coworkers have added to the success of this work: F. Boas, K. Bourant, E. Gilg, W. Figdor, F. Schneider, P. N. Schürhoff, J. Weese, H. Wolff, S. Zeisel and A. Zimmermann.

This edition differs from the previous ones in first dividing the numerous raw materials into groups, which are then arranged alphabetically and are thus taken up. In this first volume the groups are the following: *Alkaloide* (Alkaloids) by F. Boas, to which 32 pages are devoted; *Aetherische Oele und Kampfer* (Ethereal Oils and Camphor) by K. Bournot, E. Gilg and P. N. Schürhoff, to which 50 pages are devoted; *Bitterstoffe* (Bitter Principles) by J. Messner, 80 pages; *Eiweisszstoffe* (Albuminous Substances) by F. Boas, 9 pages; *Enzyme* (Enzymes) by F. Boas, 12 pages; Farbstoffe (Coloring Substances) by R. Hoffmann, E. Gilg and P. N. Schürhoff, 79 pages; *Fasern und Baste* (Fibres and Bast) by J. Weese and S. Zeisel, 95 pages; *Gerbstoffe* (Tannins) by W. v. Brehmer and E. Konstanty, 136 pages; Gallen (Galls) by W. Figdor, 19 pages; *Gummiarten* (Gums) by W. v. Brehmer and S. Zeisel, 58 pages; *Harze und Balsame* (Resins and Balsams) by H. Wolff, 85 pages; and *Hefen* (Yeasts) by F. Boas, 14 pages. The authors' concept "raw materials" is pretty broad, and includes not only in a few instances the living plant, for example the sugar cane, and more often the dried plant, but also such substances as exudations, whether natural or produced artificially, and extracts, for example Gambir, fixed oils, etc., etc. They realize the difficulty in answering the two questions, "What is a raw material?" and "What is a manufacture?" They note that the concept "raw material" is not a fixed one, and that it is more or less conventional.

Each group of raw materials is preceded first by a general part, next the special part and finally a bibliography. Thus under *Alkaloids*, in the general part are taken up, "Characteristics," "Occurrence," "Detection," and "Classification." In the special part we find descriptions of the various alkaloids known, arranged in scientific order, beginning with those found in the Cryptogams, next those found in the Gymnosperms, then those in the Monocotyledons and lastly those in the Dicotyledons. Most of the alkaloids are found in the Dicotyledons. A bibliography of 191 titles concludes the article on Alkaloids.

Ethereal Oils are treated in the same way. First, the general part in which are taken up the chemistry, the physics, how obtained, adulterations, substitutions, etc., etc. In the special part comes a botanical explanation and illustration of the various glands, and glandular hairs that secrete volatile oil. The oils are taken up alphabetically, and in each case is given its botanic source, habitat, how obtained, its composition, how detected and its uses. It has a bibliography containing 112 titles.

Likewise, *Bitter Principles* are treated much the same way. It is concluded with a bibliography containing 874 titles. Also the one on *Albuminous Substances or Proteids*, it is concluded with a bibliography containing 17 titles. And the one on *Enzymes* has one containing 84 titles. The article on *Coloring Substances* is treated as follows: First the botanical part and second, the chemical part. In the latter, the various coloring substances, 170 in number, are classified and then taken up according to their chemical composition. It is concluded with a bibliography con-

taining 325 titles. *Fibres and Bast* are treated much the same as Alkaloids, first the general part in which are taken up their anatomical structure, morphology, chemical characteristics, physical properties and microchemical reactions; and second the special part, containing first a general survey of plants furnishing fibres, and most important technical uses made of plant fibres, followed by a general description of them, taken in the following order, first plant hairs, then bast fibres, leaf fibres, etc. It has a bibliography of over 800 titles. The authors go into this subject with the greatest detail, treating it perhaps better than any of the others.

Fats and Oils have similar consideration, first a general part, in which authors take up, the occurrence and physiological significance, how obtained, purified, use, chemical composition, etc., and, second a special part in which the oils are taken up alphabetically. A bibliography containing 722 titles accompanies the article.

Tannin, too, has first a general part and then a special part. Plants containing tannin are taken up in the following order: First, tannin-producing barks, then tannin-producing woods, tannin-producing leaves, tannin-producing roots and last, tannin-producing fruits. This article has a bibliography containing 491 titles.

The article on *Galls* is treated also with a general part and a special part. It has a bibliography containing 94 titles. The one on Gums, likewise has a general part and a special part. In the general part the authors take up the physical and chemical differences and how gum is produced. It has a bibliography containing 242 titles.

Resins and Balsams are treated also much the same way. In the special part there is a table of solubilities of the most important resins and balsams in alcohol, in ether, in chloroform, in carbon disulphide, in benzol, etc. The bibliography contains 364 titles.

The last group taken up in this first volume is that on *Yeasts*. The author takes up the morphology, and the classification of this group of plants, the chemical analysis of the yeast cell, and the various uses made of yeast, in fermentation and in medicine. It has a bibliography containing 110 titles.

This valuable encyclopedia of knowledge should find a place among the books of reference found on the shelves in all drug stores.—CHARLES C. PLITT.

The well-known publisher, Julius Springer, Linkstr. 23 and 24, Berlin W. 9, submitted the following three books for review:

Grundzuege der Praktischen Pharmazie. Von Dr. Phil. Richard Brieger. 6 völlig neubearbeitete Auflage der "Schule der Pharmazie," Praktischer Teil von Dr. E. Mylius. Octavo. 100 Textabbildungen 358 pp. Cloth Mk. 14.70.

The Practical Part of the "School of Pharmacy" by Apotheker Dr. E. Mylius lived through five editions, surely a proof of its popularity and usefulness. The sixth edition is now before us under a new title "Fundamentals of Practical Pharmacy" by Apotheker Dr. Richard Brieger, one of the editors of the *Pharmazeutische Zeitung*.

Instead of a lengthy Introduction, the author agreeably surprises us with a letter from an Apotheker to his son who is about to enter pharmacy under the tutorship of a friend. That the old Apothecary lays special stress upon carefulness, conscientiousness and honesty is to be expected! Among the sixteen chapters I beg to call attention to the following: II. A Walk through the Apotheke; V. The Sale of Medicines and Poisons; VI. Prescription Compounding; X. Sterilization; XI. Manufacturing Pharmacy; XIII. Homeopathy and Biochemistry; XIV. Commercial Pharmacy; XVI. Pharmaceutical Jurisprudence.

A double-column Index of 19 pages gives testimony of the contents of this book, which although written for German conditions is of great value not only to the student but even to pharmacist and professor in the United States.

Die Tablettenfabrikation und ihre maschinellen Hilfsmittel. Von Georg Arends. 3. Auflage. 63 pp. Mk. 3.75.

The first edition of this little book was published in 1915 and the present, third edition has been thoroughly revised and enlarged. Besides the manufacture in all its phases, the preservation, packing and sterilization of tablets are thoroughly treated. A chapter of 20 pages is devoted to Tablet machines for use on a large as well as small scale. Explicit directions are given in another chapter of 30 pages for the manufacture of tablets of different substances in alphabetical arrangement from Acetanilid to Washing Blue. It is a book well worth having.

Der Apotheker als Subjekt und Objekt der

Literatur. Von Georg Urdang. Mit 16 Bildnissen. Octavo 181 pp. Cloth Mk. 9.60.

George Urdang, the zealous editor of the *Pharmazeutische Zeitung*, the author of "Der Apotheker in Spiegel der Literatur" and last but not least, one of the charter numbers of the "Gesellschaft für Geschichte der Pharmazie" founded in Innsbruck, Tyrol on August 17, 1926, presents herewith a new book which should be of interest to every pharmacist who loves his profession.

The first part of the work, "The Apothecary as Subject of the Literature," the pharmacist as author, contains the following biographies together with sixteen full-page illustrations: Bechstein, Zeise, Lohmeyer, Fontane, Ibsen, Bielau, Genthe, Stinde, Trakl, Trothandl, Kopernikulus, Mayer, Merkl, Mühsam, Wellenberg and Welten.

The second part, "The Apothecary as Object in the Literature" contains the following chapters: Apothecary and his Shop; the Comical Pharmacist; The Pharmacist as Amateur; The Romantic Apothecary; The Skeptical Apothecary; The Charitable Pharmacist and Conclusion.

At the end of the book six pages are devoted to the Literature which deals with Pharmacy and Pharmacist, arranged in alphabetical order. This list alone is worth the price of the book!

We wish the work the best of success, also in the United States and sincerely trust that many a pharmacist will become inspired by it to a greater love for his profession.

Magistra veritatis historia!

OTTO RAUBENHEIMER.

The unsigned notices and reviews have been prepared by the Editor.

A Facsimile of the first Edition of the Pharmacopœia Augustana with introductory essays by Theodor Husemann, published by the State Historical Society of Wisconsin, Madison, 1927. Price $5.00.

The late Albert H. Hollister was an active member of the AMERICAN PHARMACEUTICAL ASSOCIATION and a Vice-President. His interest in pharmacy was evidenced by his activities during life and expressed by his will and that of his widow, whereby the Hollister pharmaceutical library fund was established in 1914 and is part of that of the Historical Society of Wisconsin. "The object of the Society is not to duplicate the valuable pharmaceutical collection of the University of Wisconsin but to do for pharmaceutical Americana what the Society has been doing for Americana at large, and to do it in the same broad spirit. As a contribution of that kind the Society has reproduced the first edition of the Augsburg Pharmacopœia, one of the earliest European Pharmacopœias and the one which possibly exercised the greatest influence upon later pharmacopœias. It no doubt guided the compilers of the London Pharmacopœia, later editions of which in turn served the compilers of the first United States Pharmacopœia in like manner. With this the first of a series of reproductions the State Historical Society hopes to impart a new stimulus to pharmacopœial historical research everywhere making it possible for historians to use photographically true copies of the originals."

The Facsimile Reproduction of the first edition of the Pharmacopœia Augustana is an outstanding work as far as American pharmacy is concerned and possibly to a certain extent points to a way in which the Library of the AMERICAN PHARMACEUTICAL ASSOCIATION Headquarters can contribute services to pharmacy at large and to that of the United States in particular.

In this notice we are drawing largely on the preface of the publication referred to. The libraries of all schools of pharmacy will doubtless desire a copy of this valuable work for their libraries.

"In 1892 Professor Theodor Husemann of Goettingen published a series of articles in the *Pharmaceutische Zeitung* entitled 'Die ältesten Auflagen der Augsburger Pharmakopöe.' This was supplemented in 1899 by an article by the same author on 'Raymund Minderer und die Augsburger Pharmakopœn von 1613–1629.' No similar discussion of the Augsburg Pharmacopœia is to be found anywhere; hence these excellent accounts are herewith reproduced in translation for the benefit of those who desire to acquaint themselves with the editions receiving consideration therein. The later editions are still awaiting their historian.

"For the opportunity to present to students of the history of pharmacy this facsimile of the first edition of the Augsburg Pharmacopœia as Number One of the Hollister Pharmaceutical Library, the State Historical Society of Wisconsin is indebted to Dr. Joseph Schneider of Milwaukee. A graduate of the Univeristy of Wuerzburg, in the library of which one of the two known copies of the work has found a resting place, he has, with his

well-known liberality, supplied his *alma mater* with a new apparatus that made possible its photographic reproduction, and the State Historical Society with such a copy. Thanks are also due to the University of Wuerzburg for permission to use the photographic reproduction so as to make the facsimile available to both medical and pharmaceutical investigators of pharmacopœial history."

Dr. Edward Kremers edited the volume and furnished the translations of the articles presented as introductory essays. The edition is limited and, therefore, those desiring a copy should order at once.

Allen's Commercial Organic Analysis, a treatise on the Properties, Modes of Analysis, and Proximate Analytical Examination of the Various Organic Chemicals and Products employed in the Arts, Manufactures, Medicine, Etc., with concise methods for the detection and estimation of their impurities, adulterations, and products of decomposition.

Volume V. Fifth Edition, Revised and in part rewritten. Tannins, Writing Inks, Stamping, Typing and Marking Inks, Printing Inks, Amines and Ammonium Bases, Analysis of Leather, Colouring Matters of Natural Origin, Colouring Substances in Foods, Benzene and Its Homologues, Aniline and Its Allies, Naphthylamines, Pyridine, Quinoline and Acridine Bases, by the Editors and the following contributors: M. Nierenstein, H. E. Cox, Walter E. Mathewson, C. Ainsworth Mitchell, A. E. Caunce, J. Bennett Hill, John B. Tuttle, W. M. Gardner, A. B. Davis.

Editors, Samuel S. Sadtler, S.B., member American Institute of Chemical Engineers, Consulting Chemist, Philadelphia. Elbert C. Lathrop, A.B., Ph.D., member American Institute of Chemical Engineers, American Society for Testing Materials, Consulting Chemist, Philadelphia. C. Ainsworth Mitchell, M.A., F.I.C., Editor of "The Analyst," consulting chemist, London. Publishers, P. Blakiston's Son & Co. Price $7.50.

The arrangement in this volume is different from what it was in the Fourth Edition. It is, in effect, a preparation for Volume VI, on Coal Tar Colours. A section on Benzene and Its Homologues has been introduced here rather than in Volume III, as it may be looked upon as a first step on the road to coal tar dyes, and should be considered before dealing with the intermediates. Natural dye-colours are used considerably as foundation materials for the after-treatment with coal tar colours. Naturally, tanning materials and inks should be considered in conjunction with natural colours which are rich in tannin content. The synthetic dyes will be fully treated in Volume VI. Many of the sections have been entirely rewritten, and the remainder fully revised.

The contributions to the volume are: *Tannins*, by M. Nierenstein, D.Sc., England. *Writing, Stamping, Typing and Marking Inks*, by C. Ainsworth Mitchell, M.A., F.I.C., England. *Printing Inks*, by John B. Tuttle, B.Sc., New York City. *Amines and Ammonium Bases*, by H. E. Cox, M.Sc., Ph.D., F.I.C., England. *Analysis of Leather*, by A. E. Caunce, M.Sc., F.I.C., England. *Colouring Matters of Natural Origin*, by Prof. W. M. Gardner, M.Sc., F.I.C., England. *Colouring Substances in Foods*, by Walter E. Mathewson, Topeka, Kansas. *Benzene and Its Homologues*, by J. Bennett Hill, Ph.D., Philadelphia. *Aniline and Its Allies*, by A. B. Davis, Cincinnati, Ohio. *Naphthylamines, Pyridine, Quinoline and Actridine Bases*, by A. B. Davis, Cincinnati, Ohio.

The treatise is so well and favorably known that a review, except in outline, as above, is unnecessary.

Organic Chemistry. By Hugh C. Muldoon, D.Sc. P. Blakiston's Son & Co., Philadelphia, 1927. 32 illustrations, XV pp 496. Price $3.00.

This splendid volume, designed primarily for students of Pharmacy, Medicine and the related sciences, reveals the fact that the writer has truly accomplished his intentions. Careful perusal of the contents discloses a wealth of practical detail appropriately coordinated so as to prove at once both interesting and useful.

The writer has in accord with his plan omitted numerous topics invariably found in the great majority of texts of this type. Much of the material so deleted consists, for example, of the electronic conception of valence, isoelectric data, ionization, permutations of the paraffin series, and numerous other subjects of neither value nor interest to students of Pharmacy and Medicine.

The illustrations are chiefly half-tones; the text occupies 460 pages, in addition to 2 pages devoted to a glossary of medical terms, 2 pages of bibliographic references and 18 pages of an efficient index. Each of the 26 chapters is concluded with numerous questions for exercise and review.

While treating essentially of U. S. P. and N. F. medicinals and related substances, the author has accorded qualitative and quantitative procedures very scant treatment; these are defined, rather than described. The first chapter, "Analysis, Molecular Weights, Formulas" in particular, should for a book of this scope include illustrations of laboratory apparatus mentioned in the text; *e. g.*, under the methods of molecular weight determinations, estimation of C, H, etc. The introduction of more chemical equations would in numerous instances serve to amplify certain phases involved in manufacturing processes, *e. g.*, in section 234, Citric acid—the mode of obtaining this commodity is described in brief, but no equations are given.

The book includes discussions of many new chemicals recently introduced into the U. S. P. and Materia Medica generally, *e. g.*, Butyn, Mercurochrome, Chaulmoogra esters, etc., as well as an excellent treatment of the Vitamins. This little volume is, so far as noted, free from typographical errors, and despite the limitations intentionally imposed by the author, one of the very best texts of its nature now available.

SIMON MENDELSOHN.

A Laboratory Manual of Qualitative Chemical Analysis for students of Pharmacy. By Theodore J. Bradley, A.M., B.S., Ph.G., Professor of Chemistry, Massachusetts College of Pharmacy. Fourth Edition. 12 mo. 184 pp., cloth. Lea & Febiger, Publishers. Price $2.25.

The Preface states that "this manual was prepared with the objects of acquainting the student with the general methods of qualitative analysis and preparing him to carry out such qualitative tests as the pharmacist may be called upon to make. The course is arranged to include one hour of lecture, one hour of recitation and about three hours of laboratory work a week for one school year. Practice on the analysis of unknown solutions is provided for throughout the course. This is important, as it increases the interest of the student and develops his self-reliance by putting him upon his own responsibility in doing the work and in interpreting the results.

The elementary theory of chemistry is given in the first twenty-five pages. The metals are considered in seven groups, concluding with an analysis of a solution for all groups of the metals. The acids are considered in three groups—A, those whose radicals are precipitated by silver nitrate in the presence of nitric acid; B, acids whose radicals are precipitated by barium chloride from a neutral solution, and Group C include those whose radicals are not included in the foregoing. Analysis is made for each member of the groups.

Other subjects are given consideration under the following: Analysis of a solution for the important metals and acids. Treatment of solid substances. Qualitative examination of official inorganic chemicals. General qualitative tests of the U. S. Pharmacopœia. Destruction of organic matter; Reagents and test solutions.

Review has been made of previous editions and favorable comment of the book as a laboratory guide.

The Art of Compounding. A Textbook for students and a Reference Book for Pharmacists at the Prescription Counter. By Wilbur L. Scoville. Fifth Edition, 8 vo., 485 pp. P. Blakiston's Son & Co. Price $4.00.

The author is a member of the Revision Committee of the U. S. Pharmacopœia and of the Committee for Revision of the National Formulary. The first edition of "The Art of Compounding" was prepared by the author when he taught the art of compounding and prescription practice at Massachusetts College of Pharmacy, about twenty-five years ago or more. Ever since then the book has found a welcome by pharmacists and teachers of pharmacy. The purpose of the author was set forth in the first volume and the revisions have been progressive with the same thought and purpose in the mind of the author.

The author gives a quotation from Carlyle as text which he uses in the presentation of Chapter I. It is worth quoting: "The good of a book is not in the facts that can be got out of it, but in the resonance it awakens in our own minds. A book may strike out of us a thousand things it does not itself know." A paragraph of the chapter is quoted in the following: "By study the knowledge and experience of others are made available to us, and we learn to deduce new methods or to newly apply principles. Study has for its object the assimilation of the thoughts of others. To this end the thought involved in the text must first be understood."

The present edition has undergone careful revision. The first edition contained fourteen chapters and the present has eighteen; the added chapter of the volume under review

is that on "Adjusted Solutions" in which is considered the needs and methods for adjusting ampul solutions for reaction and isotonicity, of collyria for isotonic conditions, and of colloidal solutions for stability.

More than 650 prescriptions are now included as directly illustrative of the principles discussed in the text, and more than 350 additional typify State Board examinations. Many of the additional prescriptions are types of recent prescription practice. It is not necessary to go into the details of the chapters as both the author and his work are well and favorably known to pharmacists everywhere and it is sufficient to call their attention to the recently revised edition. The book speaks well for the publishers.

Introduction to the 6th Edition of the German Pharmacopœia. Prepared by members of the Committee on Public Health. Verlag Chemie, G.m.b.H., Berlin, W. 10. 208 pp. Price M4.

The revision of the German Pharmacopœia has provided the opportunity for further research work and for acquainting the users with the German Standard. The greater part with this information is included in the excellent volume under review and reprinted from the *Archiv der Pharmazie* and *Berichte der Deutschen Pharmazeutischen Gesellschaft*, published by the German Pharmaceutical Society.

While the work is somewhat comparable to the "Digest of Comments on U. S. Pharmacopœia and National Formulary," it presents the researches, investigations and reports of the compilers; thus Th. Paul, R. Dietzel and C. Wagner discuss the general principles underlying the new tests for Chemicals, with volumetric analysis, lead and arsenic limits, gravimetric assays, determination of boiling points, testing of thermometers, of glassware, ampuls, etc. J. Gadamer and E. Neuhoff report on alkaloidal content of official drugs and galenicals. H. Beckurts reports on tests for fats, oils, waxes, resins, etc. H. Thoms and F. Unger deal with essential oils, camphor, eucalyptol, thymol, etc., and standards for strophanthus, cantharides, etc. F. Stadlmayr reports on other tests; W. Brandt on the drugs of the Pharmacopœia; C. Schnabel on the galenical preparations; E. Rost on pharmacological assays; L. Haendel on seras and tuberculin and salvarsan preparations.

Improvements in chemical assays have been made and the fact that the reports have been compiled in book form will be welcomed because of their value for laboratory workers and other pharmacists. The price of the book is remarkably low, even though paper bound.

Formulae Magistrales Germanicae, compiled by Prof. Dr. L. Lewin, 2nd edition; price M3.50. The book of formulas, with index, of 128 pages is published by the German Apothecaries' Society, Berlin, N. W. 87, Levetzoostr. 16 B. With the book there is enclosed a dose table of the more commonly used galenicals and medicinal chemicals.

The first ten pages are devoted to the use and dosage of remedial agents. The formulas are grouped; the first of these include nervines, narcotics and anodynes for internal and external use; the second class comprises chiefly excitants and stimulants; the third is chiefly composed of alteratives; those of the fourth group are indicated in fevers, for malarial conditions, etc. The fifth class is largely made up of antiseptics and disinfectants; the sixth of emmenagogues, hemostyptics, etc. The seventh group includes cardiacs, diuretics, saline solutions for intravenous, rectal and subcutaneous injections. Four formulas comprise the diaphoretics; another group includes expectorants, cough remedies and anti-asthmatics; the emetics are six in number; the next class is made up of remedies for tapeworms, intestinal worms, anti-parasites, etc. The twelfth group comprises cathartics and laxatives; the following class is made up of stomachics and remedies for hepatic complaints; the next class comprises preparations containing astringents; the group following is largely made up of ointments and lotions employed in the treatment of skin diseases; the last six formulas are for demulcents.

Care has been exercised in the selection of the formulas and, doubtless, quite a number of them will prove of value at the dispensing counter of American pharmacies.

The Achema Year Book was published as a guide to the Exposition in Essen, Germany, June 7–19, of this year. The exhibits were chiefly of apparatus used in chemical manufacturing. The volume is divided into four parts—A, is general; B treats of scientific installation of apparatus; C, of the industrial and technical features, and D is more or less of a directory. The book contains much advertising related to apparatus; there is contained, however, valuable information, especially for manufacturers in the chemical industries. The price of the book is M10.